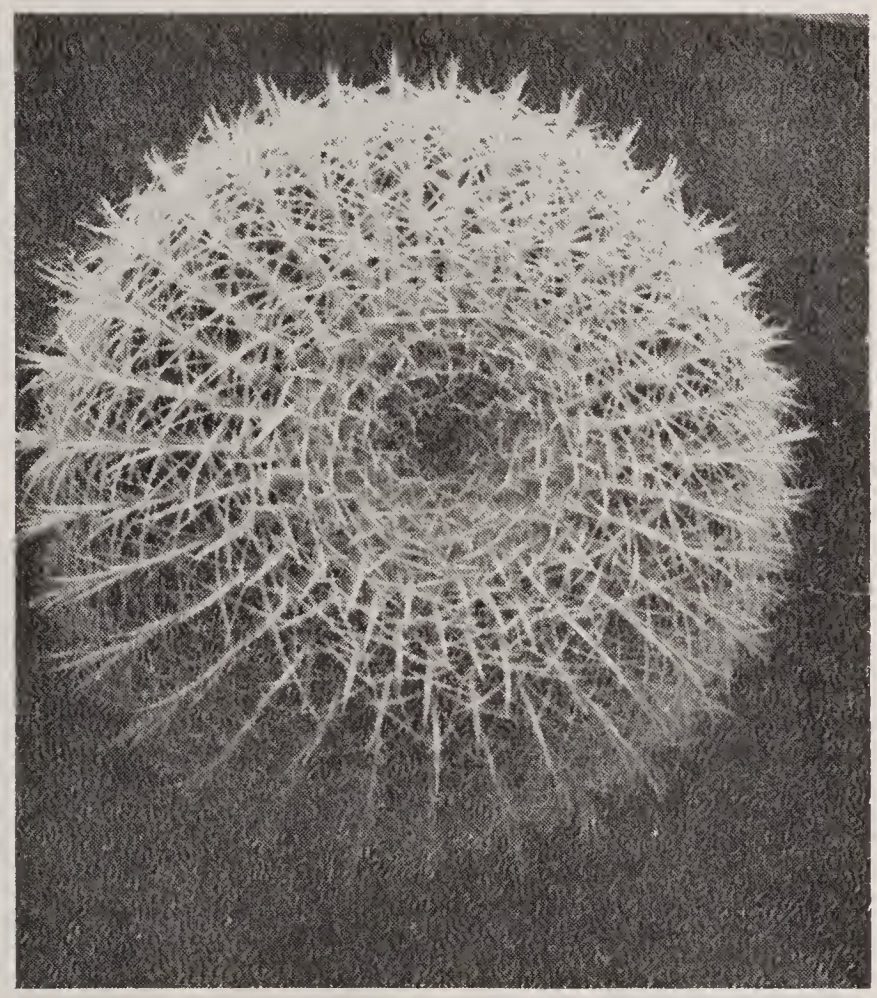
SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXIV January, 1970 No. 1



REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P. O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXIV JANUARY, 1970 No. 1

Arizona Cactus and Native Flora Society

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Cover: Geometric pattern of the Golden Barrel Cactus

Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

It's great to be back at the Garden again after a sudden sojourn in the hospital October 23rd for a coronary. Doctor says I'm doing well but ought to slow down now.

Wonderful to have a staff that took over so well in my absence of three months. Thanks go to John Weber for conducting the fall courses of six afternoon and evening classes (there was a fine enrollment of 77), and also for giving the Thursday and Sunday afternoon lectures; to Barbara Worbington for her ability to run the office, keep the bills paid, and even accumulate a good bank balance; to Bill Hendrix and Lynn Trainum for their good salesmanship—the Bookstore showed the highest sales of any December since it opened; to Lyle McGill and Stan Scott who filled in in many spots when emergencies arose. The staff was pleased that some of the Board members dropped in occasionally and approved of their smooth operation through the Earle-less weeks.

Volunteers have been an asset to our progress this past year, and credit is due those who have worked here weekly: Mrs. R. I. Turner on Mondays in the office and library; Mrs. Marshall Gebert in the Bookstore on Tuesdays; Mrs. William Reiff on Wednesday mornings; Mrs. Otto Friedrichs in the Bookstore on Wednesday afternoons; Paul and Ruby Neumann on Thursdays in the Bookstore and on the grounds; Mrs. Hiram Pratt in the Bookstore on Mondays; Mrs. Clifford Schroeder regularly working on new displays and posters; Mrs. Donald Radke who spends Tuesdays re-cataloging the whole library; and J. Harry Lehr sorting and assembling herbarium sheets every Tuesday. We also appreciate the hours that others have contributed at various times in 1969.

Additional volunteers are needed now to help at the Bookstore, to help Mrs. Radke in cataloging books, to type, to file, to make posters, to card-index Bulletin articles — in short, to do many unglamorous but much-needed and much-appreciated jobs. The Garden's added activities and enlarged membership have made this a very busy place.

The format of the Bulletin will have a few changes this year, a bit of dressing-up. Let us know if you like the changes. One idea: many new books are being added to our Library, so you will see more book reviews this year.

Twenty-third Annual Cactus Show will open on February 22nd and close at 5 p.m. March 1st. We can look forward to another good show. Many inquiries for our Classifications List came in from people who haven't previously entered exhibits. You got your copy of the list with your December Bulletin. We hope you look it over, decide what categories you want to enter, and begin to get your entries ready for the February 20th 4 p.m. deadline. Judges from Los Angeles will make the awards for cactus and succulent specimen plants, and local garden club judges will judge arrangements.

Mexican Cactus

"HORNED" CORYPHANTHA
Coryphantha cornuta

Cactaceae

The compact, globular, solitary plants were found growing in large colonies among loose rock and silt about thirty-five miles south of Zimapan, Hidalgo, Mexico. They were unusually robust plants about twice their normal size, and were identified by Hans Krainz of Zurich, who, with Felix Kraehenbuhl, accompanied us on our 1966 trip through Mexico.

The light pink to rose colored flowers, 1½" in diameter, made quite a show. The plants were three to five inches tall, and three to four inches in diameter. The obtuse nipples were quite prominent, bearing on their tips single curved 1½" central spines and six or seven spreading radials, all of a horn-yellow color with dark tips.

The plant was first described as **Mammillaria cornuta** by K. Hildmann in **K. Schumann,** Gesamtbschrbg., 496, 1898. Then in 1929 Berger placed in in the genus Coryphantha (Kakteen, p. 269, 1929).

These plants do well in cultivation if in very porous soil, and if watered lightly in summer only. They are prolific in flowering. If you wish true-species seed from them, hand-pollinate the flowers as they are opening and cover the flowers with plastic bags because Coryphanthas hybridize easily, and if other species are nearby, insects will cross-pollinate the plants. This is a hard group to identify in cultivation, as in many cases cultivated plants do not resemble the species in native habitats.

Type locality: Unknown

Distribution: The state of Hidalgo, Mexico

References:

Borg, Cacti
Backeberg, Die Cactaceae
Bravo, Las Cactaceas de Mexico

—W. H. E.

In Hidalgo *C. cornuta* flowers in May. At the Garden, in June.

Book Review

The Cacti of Arizona. By Lyman Benson. University of Arizona Press. xvii + 218 pp., 34 colored plates, 94 black and white photographs, 31 line drawings, 40 distribution maps. 1969. $6.95. (Mailed from the Desert Botanical Garden Bookstore, $7.25.)

It is most interesting to have had the opportunity of watching this book develop since its first edition as the University of Arizona's Biological Science Bulletin No. 4 in 1940, when it contained 134 pages and used some illustrations from the U. of A.'s 1933 Bulletin No. 1, **Arizona Cacti** by Stockwell and Breazeale. (Lucretia Breazeale's original drawings are reproduced in the new edition.)

The second edition, 186 pp., 1950, was also issued by the U. of A. Press and contained several changes and some new species. This edition went out of print quickly, so it is now gratifying to have Benson again available for study after many years.

(During the period when Benson's book was out of print, W. Taylor Marshall's **Arizona Cactuses** was published in 1950, and W. H. Earle's **Cacti of the Southwest,** now in its third printing, appeared in 1963.)

On first picking up this handsome **Cacti of Arizona** one feels that here is real progress, but on opening it one is struck by the surprising use of old names and feels that "regress" might be more applicable. Closer examination of the book, however, reveals that Benson has a seriously thought-out, though unusual, approach to taxonomy. His reasoning is partially explained in the course of this book, and will be found in more detail in his forthcoming **Cacti of the United States.** Essentially, the author holds a preference for the name applied to the species when it was first described, and considers subsequent taxonomic changes superfluous.

A tremendous amount of research in herbaria and in the field is evidenced in this new edition. The format is well-arranged and balanced, although it seems unnecessary and distracting to set the names of new species and varieties in bold-face type while leaving the unchanged names in light-face. After, all each new name is clearly indicated by the usual "sp. nov." or "var. nov.".

A number of excellent tables are here, such as those comparing three or more varieties of one species. The distributional maps in the book will be quite helpful to students, although they may, unfortunately, also be a source of plants for unscrupulous collectors, an ever-present danger.

The distribution of plants is heavily but indiscriminately documented. Many errors are present, due to the reporting collectors' unfamiliarity with species. As an example, **Echinocereus pectinatus** var. **rigidissimus** is recorded as growing a few miles east of Phoenix, clearly a case of misidentification, since its range is in southeast Arizona, at 4000-5000 ft. elevation, in grassland and oak habitat.

The short chapter on culture, written by A. A. Nichol for the first edition and abridged in the present edition, could have been brought up to date. Suggested methods of planting must be used with discretion by the gardener.

This is a well-illustrated book, with new photographs and all the excellent older photos made by Robert H. Peebles. It is nice to have an index in this edition; one was missing from the earlier editions.

Benson's **Cacti of Arizona** is an important book, and one we recommend

your owning. The new nomenclature combinations will be hard on old-timers, but quite exciting to neophytes and to serious collectors. We suggest you get a copy soon, since even the biggest technical publications disappear rapidly.
—W.H.E.

NATIVE PLANTS FOR DESERT BIRDS

(continued from December issue)

TOMATILLO (**Lycium spp.**). The various species of Lycium: **pallidum, fremontii, andersonii** and **cooperii**, all bear plentiful berries that many birds like to eat. From the common name you can guess that the berries look like little orange-red tomatoes. This is a somewhat straggling shrub, about a yard tall. Small white to lavender flowers in spring and again after summer rains, so that you and the birds can expect two crops of berries. Because there are so many berries on a bush the Tomatillo looks pretty for a long time, even though the birds are busy eating the semi-annual crop.

LEMONADE SUMAC (**Rhus trilobata**). A shrubby sumac, having yellow flowers and crimson berries with which you could make a lemonade-y drink if the birds don't beat you to the fruit. Rarely over six feet tall, the Lemonade Sumac is usually only about half that height and grows comparatively slowly. An ornamental shrub that bears its fruit in the summer when the birds are thirstiest.

TWO GOOD NATIVE ANNUALS

NICOTIANA TRIGONOPHYLLA, a relative of Tree Tobacco, but only three feet tall. Although this is sometimes a perennial in the Yuma area, it is better to treat it as an annual. The inch-long tubular flowers are creamy white, and are found on the plant almost all the year around. Nice for hummingbirds and the other nectar-feeders.

PENSTEMON species. Lovely red flowers for hummingbirds. Lovely even if the birds turned up their beaks at them. Penstemons look "right" in desert garden corners.

AND FOUR NATIVE TREES FOR THE BIRDS

DESERT WILLOW (**Chilopsis linearis**). This past fall an uncommon migrating hummingbird stayed two months in a friend's desert garden because the Desert Willow continued to bloom through October. This tree has so many virtues that we can't understand why it isn't more commonly planted. It is an open, many-stemmed tree, growing quite quickly to about fifteen feet. Narrow leaves and rather weeping branches. The scented pink-lavender-white flowers are two inches long, borne on large racemes, and blossom from spring through fall, although the heaviest flowering is in late spring. A number of birds like the Desert Willow, and migrating butterflies think it is a special treat. Another "plus" — because the leaves are narrow and drooping, you can see whatever bird perches on a branch rather than just squint at the flickering tail behind a big broad leaf.

ONE-SEED JUNIPER (**Juniperus monosperma**). The juniper that grows at the lowest altitude in Arizona, and so is suitable for desert gardens. It is also the juniper with sweet berries that are pleasing to quite a few birds, especially to the glossy black phainopepla. This is a slow-growing tree, to about twenty feet.

(continued on page 9)

ASPECTS OF THE DESERT

Pinnacles and mesas of eroded red sandstone make up the stark beauty of Monument Valley in northern Arizona along the Utah border. Although often snow-swept, this area is true desert, part of the Great Basin Sagebrush Desert. Elevation here is around 5,000′, with peaks over 1000′ higher.

Arizona Cactus

LEDING'S HEDGEHOG
Echinocereus ledingii

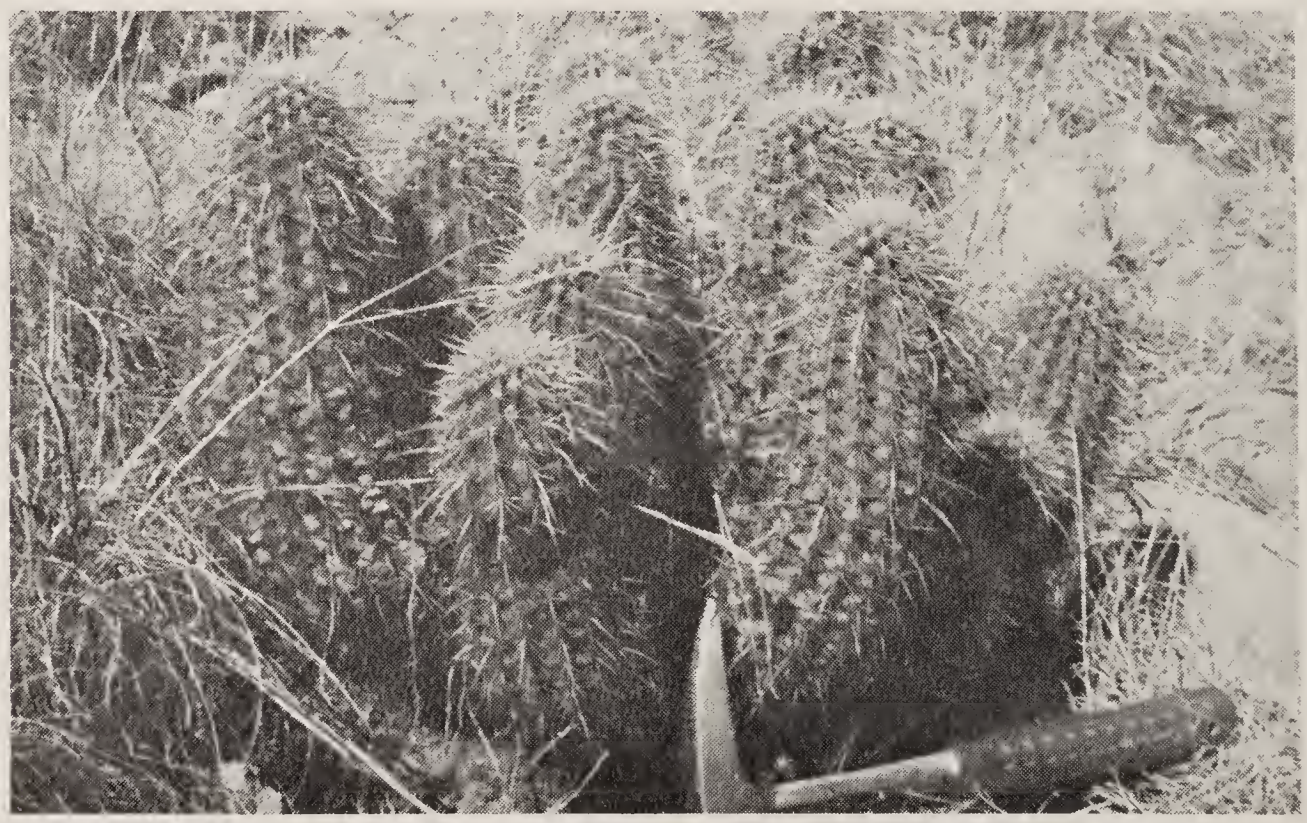
Cactaceae

The late Robert H. Peebles, Sacaton, Arizona, first described this plant in **Cactus & Succulent Journal**, Vol VIII, p. 35, 1936, and named it after A. R. Leding of State College, N. M. The plant is known only from Arizona, but it is possible that it grows in the states of Sonora and Chihuahua, Mexico.

At first glance one would think that this plant is a form of **Echinocereus engelmannii** on account of the spine color, but on close examination it is apparent that there is a solitary one-inch central spine turned downward and surrounded by ten to twelve straight half-inch translucent radial spines. (**E. engelmannii** has two to five central spines, never one, and there are other observable differences.)

This large, open clumped hedgehog cactus with four to twelve green stems two to four inches in diameter and six to twenty inches tall, is quite turgid. Often the stems will bend to the surface, creep along the ground, or cascade over rocks. It is found in the higher elevations (3500 to 6000 ft.) in the Pinaleno (Graham) Mountains in Graham County, the Mule Mountains in Cochise County, and the Santa Catalina and Santa Rita Mountains in Pima County. It grows on sandy slopes among chaparral and in woods.

The buds of the light purple to magenta flowers erupt from the areole tissue in early May. Flowers are followed by spherical green fruit, three-quarters of an inch to one and one-quarter inches long. We have gathered these fruits for their seeds when the skin and the spine clusters readily pull off, revealing a gelatinous ball filled with black seeds one-tenth inch long. If



The stems of this plant are about 16 inches tall.

E. ledingii at 4900′ in the Pinalenos. Other plants here are Nolina, Sotol *(Dasylirion),* and Pinyon-Pine.

left undistrubed the fruit will turn reddish.

This is a hard plant to transplant from its native high altitude to a low desert garden. Care should be made that it be placed in a shaded area with good drainage, and given supplemental watering during the hot summer. Some gardeners become quite discouraged when this normally plump plant dehydrates and shrinks in our hot desert.

An excellent spot to see these plants in their native habitat is a drive up the Swift Trail in the Graham Mountains south of Safford, Arizona. As you leave the desert you will first observe **E. engelmannii,** then, as you climb higher, **E. fendlerii** var. **robustus,** then **E. ledingii,** and farther up the mountain **E. triglochidiatus** var. **melanacanthus.**

Type locality: Pinaleno (Graham) Mountains

Distribution: Southeast Arizona

References:

Benson, Cacti of Arizona

Earle, Cacti of the Southwest

—W. H. E.

(continued from page 6)

SUGAR SUMAC (**Rhus ovata**). A small evergreen sumac, reaching about ten feet in height. It is exceptionally handsome, with shiny bright green leaves, deep red buds and long dense clusters of creamy flowers. The fruit is reddish and sweet and abundant. Like Lemonade Sumac, it sometimes bears two crops of flowers and fruit.

MEXICAN ELDER (**Sambucus mexicana**). This one needs more water than the other plants mentioned, since its native location is along stream beds, but it is worth considering for its abundant dark blue berries, its spreading evergreen foliage, and the dense shade it provides in the desert. You could make elderberry pies or elderberry wine if you could possibly pick the fruit before the birds eat it.

(to be concluded)

Arizona Wildflower

PAPERFLOWER
Psilostrophe cooperi

Compositae
Sunflower Family

Paperflower is not hard to identify. If you see a rounded shrub one to two feet high, completely covered with inch-and-a-quarter daisies, chances are that it's Paperflower. The color of the flowers? Bright yellow, pale yellow, straw, cream; for the distinctive feature of this plant, which gives it its name, is the months-long persistence of the flowers which are bright yellow when they open and then turn papery and fade to pale cream. Occasionally, the flowers persist all winter when there are no heavy rains to wash them off the plant.

Psilostrophe cooperi is one more species named for Dr. J. G. Cooper, the botanist-geologist-ornithologist who worked in the California deserts in the 1860's. Cooper's Hawk is also named for him.

Distribution of this plant is in the 2000-5000 ft. elevational range of Utah and western New Mexico to southern California and northwest Mexico. In Arizona it grows from Navajo through Mohave Counties in the north down through Cochise, Pima and Yuma Counties. It is common on mesas and plains, and after its spring flowering it blossoms again sporadically through the year. We have seen it once in full flower as late as November, after the first of the winter rains, and before frost came.

This shrubby perennial is more or less woolly in all parts and has thickish dull green alternate leaves three-quarters to three and three-quarters inches long and an eighth of an inch wide.

The flowers bloom bright yellow with orange-yellow centers. An attractive characteristic of the flowers is the way each ray is puckered at the base and twisted to the side, angled much like the vanes of an electric fan.

REFERENCES:
Armstrong, Field Book of Western Wild Flowers.
Jaeger, Desert Wild Flowers
Kearney & Peebles, Arizona Flora
Shreve & Wiggins, Veg. and Flora of Sonoran Desert.

—L. D.

Desert Trees and Shrubs

CRUCIFIXION THORN
Canotia holacantha

Koeberliniaceae
Koeberlinia Family

Another one of the three plants commonly called Crucifixion Thorn in Arizona (**Holocantha emoryi** was described in the December Bulletin), is **Canotia holacantha.** It generally grows into a small, spiny tree, two to six meters (6 to 18 ft.) high. The spine-tipped branches are flexible and ascending, with smooth yellow-green bark. Twig diameter is two to three mm. There is a short trunk of 40 cm. diameter (one foot), with gray fissured bark. Seedling and juvenile plants have small narrow lanceolate leaves up to 2.5 cm. (1 inch) in length. The leaves of older plants are reduced to small deciduous scales that are absent for most of the year. Flowering occurs from May to August. Flowers are inconspicuous, greenish-white, and occur in clusters of three to seven flowers along the branches. A flower is about 6 mm. (¼ inch) in diameter and has five sepals, petals and stamens. The sepals are about one-third as long as the narrow oblong petals. Fruit consists of a hard, ovoid-elliptic, pointed capsule about 2 cm. long including the long beak. The red-brown capsule is five-celled and splits open at maturity. Capsules remain persistent on the tree only to the following year. The seeds are very small, winged below, oval and flattened.

Canotia holacantha has an elevational range from 600 to 1500 meters (2000 to 5000 ft.). It extends from the upper desert margin into the chaparral belt, occupying rocky hillsides, mesas, or desert flats. On some sites it is quite abundant. This species is found in central and western Arizona, along the Colorado River in extreme southern Utah, in one location in southeastern California, and in northwestern Mexico. In Arizona it has an almost continuous range at intermediate elevations from

Graham and Navajo Counties in the east to Mohave and Yuma Counties in the west. It extends also into eastern Pinal, Gila, northern Maricopa, southern Coconino, and Yavapai Counties.

Canotia holacantha is seldom found as a cultivated plant, but several of the newer Arizona towns are located within the range of the plant. Where the native vegetation has been preserved as much as possible, as in Carefree, Arizona, it is one of the dominant features of the desert landscape. Seedlings have a slow growth rate, but germination percentage of fresh seed is very good. It requires full sun exposures and coarse well-drained soils.

References:

Benson & Darrow, Trees and Shrubs of the Southwestern Deserts

Kearney & Peebles, Arizona Flora

Little, E. L., Southwestern Trees, Agric. Handbook No. 9 USDA

—J. H. W.

GARDEN ACTIVITIES

JANUARY

Thurs.	1st	LECTURE—Cacti of Arizona in Flower	3 P.M.
Sun.	4th	LECTURE—Arizona Wildflowers	3 P.M.
Tues.	6th	CACTOMANIACS meeting	8 P.M.
Wed.	7th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs.	8th	LECTURE—Arizona Wildflowers	3 P.M.
Sat.	10th	NATURE TRIP—Big Bug (85 mi.)	8:30 A.M.
Sun.	11th	LECTURE—Arizona Trees and Shrubs	3 P.M.
Wed.	14th	CLASSES—Desert Succulent Plants	3 & 8 P.M.
Thurs.	15th	LECTURE—Arizona Trees and Shrubs	3 P.M.
Sun.	18th	LECTURE—Arizona Birds and Animals	3 P.M.
Wed.	21st	CLASSES—Cultivation of Succulent Plants	3 & 8 P.M.
Thurs.	22nd	LECTURE—Arizona Birds and Animals	3 P.M.
Sun.	25th	LECTURE—Arizona Scenics	3 P.M.
Wed.	28th	CLASSES—Identification of Trees and Shrubs	3 & 8 P.M.
Thurs.	29th	LECTURE—Arizona Scenics	3 P.M.

FEBRUARY

Sun.	1st	LECTURE—Unusual Leaf Succulent Plants	3 P.M.
Tues.	3rd	CACTOMANIACS meeting	8 P.M.
Wed	4th	CLASSES—Cultivation of Trees and Shrubs	3 & 8 P.M.
Thurs.	5th	LECTURE—Unusual Leaf Succulent Plants	3 P.M.
Sat.	7th	NATURE TRIP—White Tank Mts. (40 mi.)	8:30 A.M.
Sun.	8th	LECTURE—Cacti of the Americas	3 P.M.
Wed.	11th	CLASS—(afternoon) Field Trip, Pinnacle Peak	8:30 A.M.
Thurs.	12th	LECTURE—Cacti of the Americas	3 P.M.
Sat.	14th	CLASS—(evening)—Field Trip, Pinnacle Peak	8:30 A.M.
Sun.	15th	LECTURE—Cacti of Mexico	3 P.M.
Sat.	21st	ENTRIES DUE FOR ANNUAL CACTUS SHOW	5 P.M.
Sun.	22nd	to March 1st.—23rd ANNUAL CACTUS SHOW	dly. 9-5 P.M.

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Vol. XXIV February, 1970 No. 2

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Cover: Joshua Tree in bloom

Desert Botanical Garden of Arizona

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Student Horticulturists—Lyle McGill, Stan Scott

Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

Our **23rd Annual Cactus Show** will open on February 22nd and continue through March 1st. The present interest indicates that there may be a bigger display of exhibits than even last year, which was an excellent one. Classification lists for exhibitors were included with your copy of the December Bulletin and have been sent out to past exhibitors and state garden clubs. We hope that by now you have your own entries for the show prepared. Remember that if three or more entries of the same genus are entered we will set up another division for them, even if it is not listed in the classification list. There isn't any fee for entries in the Show, as past exhibitors will recall.

Trophy awards will be given for sweepstakes and individual winners in various classes. Ribbon awards to first, second, third, and honorable mention entries as the judges decide.

And, of course, admission to the Show is free.

As far as we can determine, this is the longest continually run Cactus Show in the United States, and possibly longer running than any in Europe where exhibiting plants is an extensive and serious hobby.

Memberships in the Garden have recently gone over the one thousand mark. When the Garden reopened in December 1946 after its wartime shutdown there were only **nineteen** members left from the 300 members of 1937-38.

Increase in membership has been due to many factors: enthusiasm of existing members, newspaper and magazine articles, lectures here and elsewhere, the classes given here at the Garden, and of course the visitors to the Garden. Remarkable, when you realize that we have never had any organized membership campaigns. There are, however, many good reasons for a membership drive, and I think we may have one in the near future.

Prospects for Spring Wildflowers: not very good. We have already been asked about it by mail, phone and visitors, and are forced to predict a meager spring. The rainfall in the first six weeks of the year is what determines to a great extent the profusion or scarcity of desert wildflowers. 1970 has been bad. We have had only a quarter of the normal rainfall, .30 inches as opposed to normal 1.16 inches. To make the situation even more pessimistic, early February weather has been warmer and windier than usual. If we are fortunate enough to have some good rains in late February and again in March and early April we will have some fair stands of color. Let's hope for rain. Flowers on cacti, trees and shrubs will be prolific as usual regardless of rain.

A recent inquiry from a national magazine asked permission to use some of our December and January article on "Native Plants for Desert Birds." We're flattered.

(Continued on page 21)

Book Review

Desert Plants for Desert Gardens, by Patricia Moorten and Rex Nevins. Best West Publications, Palm Desert, Calif. 112 pp., photographs. 1969. $3.15.

This book's title is extremely misleading. It should have been more honestly called "Desert Plants for **Palm Springs** Desert Gardens". The horticultural instructions are completely wrong for any area outside the sandy Palm Springs region, so wrong that we fear that a number of gardeners, deceived by the author's blithe assumptions, will kill their desert plants if they follow directions given here.

Ordinarily, we would not bother reviewing a book like this, but since we have already seen it displayed in quite a few bookstores in our area, we feel strongly that our readers should be warned that it has no application in our desert areas.

The author of the Foreword must not have seen the galley proofs of the rest of the book as, being a very meticulous writer himself, he would have raised his hands in horror at the misspellings and misidentifications that are liberally sprinkled throughout the text.

Nevins' excellent photos of plants and landscaping are the one good feature of the book. Some of the landscaping is the work of the female author's husband, Slim Moorten, who introduced, years ago, the use of very large boulders and slabs of stone for backgrounds or as a focal point in his landscaping designs. Many Palm Springs hotels, motels and palatial homes have striking examples of his artistic ability to combine rocks and plants in a desert setting.

—WHE

NATIVE PLANTS FOR DESERT BIRDS

(Continued from January issue)

OCOTILLOS for their plumes of red flowers; PRICKLY PEAR for the juicy autumn fruit loved by thrashers, cactus wrens, many other birds; and YUCCAS, utilized by twenty-five species for nesting, and by Scott's Oriole for the leaf fibers that make good nesting material.

— BUT DON'T PLANT

DESERT MISTLETOE. You could, and you'd please the phainopeplas, bluebirds, robins, quail, thrashers — but mistletoe is a parasite, especially on leguminous trees, and you might get a king-sized infestation. So forget it.

Where to get these plants for your garden? Unfortunately, your friendly neighborhood nurseryman can't help you with many. He may have ocotillo, yucca, prickly pear, and sometimes desert willow. For the rest, you must grow them yourself. Collect the seeds and take cuttings of trees and shrubs. A number of these are reputed to grow easily from cuttings, many grow easily from seed. We wish we could tell you that Messrs. Smith & Jones, Inc. are happy to sell you all the native plants you want, but Messrs. Smith & Jones don't exist. Perhaps they will some day, but they don't today.

Mexican Cactus

Dolichothele longimamma

Cactaceae

The generic name is Greek, and the specific name Latin, both meaning "with long nipples", which refers to the enlongated tubercles. The Genus Dolichothele is first found in Britton & Rose "Cactaceae", 1923. The plant was first described by De Candolle in 1828 as **Mammillaria longimamma**. Britton & Rose erected the new genus because the plants had elongated, soft tubercles, large funnel-shaped flowers and non-milky sap. There are four usually-recognized species in the genus today, yet Backeberg in "Die Cactaceae" lists thirteen species, nine of which should, we feel, be referred to **Mammillaria**.

Dolichothele longimamma is a lovely, glossy-green, plump plant that clusters readily. It has tubercles two to three inches long, each one bearing terminal spine clusters of six to twelve half-inch radials that are white to light yellow, and one to three short dark central spines. The beautiful citron yellow flowers are one and a half to two and a half inches long and broad Fruits are smooth, greenish to red, elongated, and edible, with brown seeds.

This is an easy plant to grow. It stands abuse and drought, and it proliferates quite readily. Offsets can be removed during the summer growing season for propagation. The plant does well in the shade at our lower elevations. Type locality: Mexico

Distribution: Central Mexican highlands.

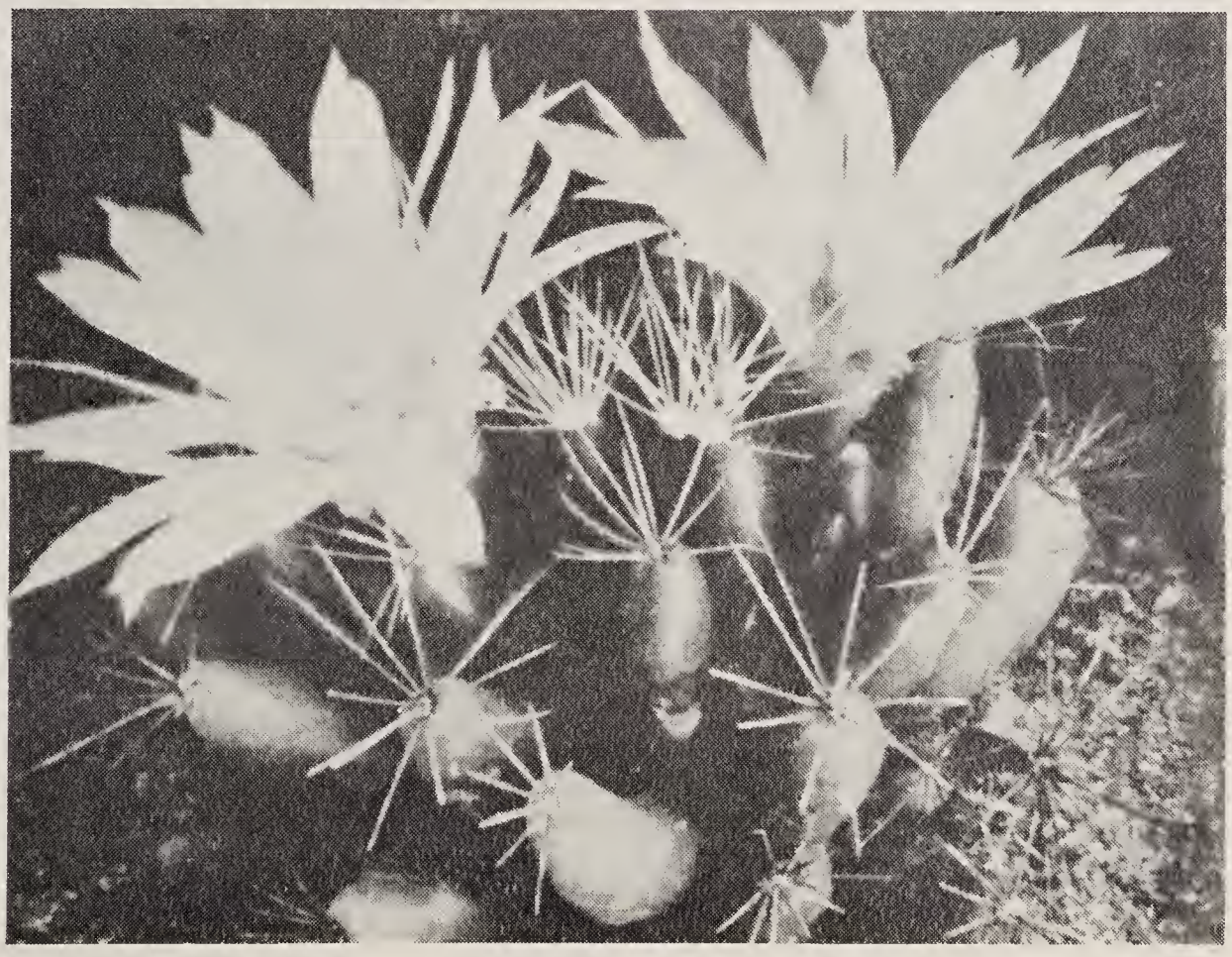
References:

Backeberg, Die Cactaceae

Bravo, Las Cactaceas de Mexico

Britton & Rose, Cactaceae

—WHE



Arizona Cactus

BONKER'S HEDGEHOG
Echinocereus bonkerae

Cactaceae

The colorful flowers of this cactus are quite striking, especially when viewed in their stark, dry natural habitat. When you see Bonker's Hedgehog (or Short-spined Strawberry Hedgehog) on a rocky hillside you will stop and marvel at the intense yet soft and velvety rose-purple color of its flowers. It is a color frustrating to color photographers, as it comes out either too dark or too light.

This plant was first described by John James Thornber in his book "The Fantastic Clan", and named in honor of Frances Bonker, his co-author, in 1932. It was found in the Pinal Mountains, near Globe, at 4000 ft. elevation.

This low hedgehog is at first singular, four to eight inches tall. It eventually forms small clumps of five to twenty stems. It blends with its surroundings of short grass, shrubs and rocks. Inconspicuous until in flower, it then becomes an eye-catcher.

The flowers are two to three inches in length and width, with spreading petals. They close in late afternoon, and reopen for several days in succession. April flowers are followed by juicy red berries about one inch long. The berries can be picked in late May and used for making jam, or eaten with cream like strawberries which they resemble in taste.

The short central spines and appressed radials make this an easy plant to handle and use horticulturally. Care must be used in preparing the ground, as this plant needs a good well-drained, porous soil if it is not to rot.

Type locality:

Pinal Mtns., Globe, Arizona

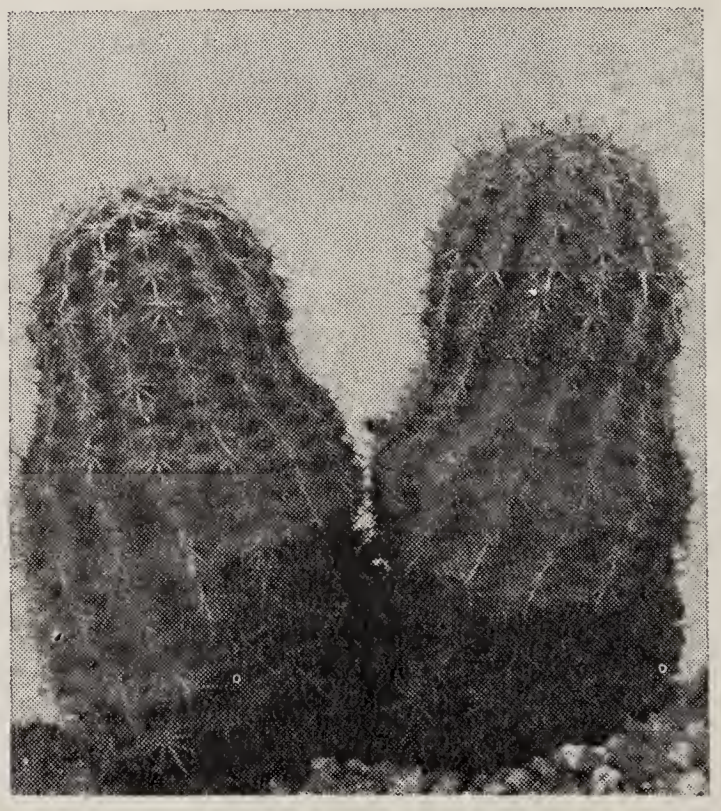
Distribution:

Sand and gravel plains and slopes 3000-5000 ft. in grassland and chaparral. Gila, Pinal, Graham, Cochise and Santa Cruz counties in Arizona.

Reference:

Benson, L., Cacti of Arizona
Britton & Rose, Cactaceae
Earle, W. H., Cacti of the Southwest
Marshall, W. T., Cactaceae

—WHE



E. bonkerae has remarkably short central spines, only ¼″ to ½″ long.

ASPECTS OF THE DESERT

After driving miles across the flat high desert of northeast Arizona, you are suddenly on the brink of 1000-ft. deep Canyon de Chelly, one of the classic archaeological sites of the Southwest. Pueblo Indians lived in its cliff dwellings until 1300. Now Navajos live and farm on the canyon floor.

Desert Trees and Shrubs

ALLTHORN
Koeberlinia spinosa

Koeberliniaceae

Throughout most of its range **Koeberlina spinosa** grows as a very spiny, multi-branched, spreading shrub, but occasionally it is a small tree. It attains a height of up to 4.5 meters (15 feet) and bears numerous spine-tipped stout branches and twigs. These are dark green, the older bark turning gray and becoming scaly. The wood is very dense. Allthorn is leafless most of the year, the scale-like leaves on new growth being soon shed. Flowering takes place from March to June, coming earlier in the western and lower elevations of the range. The flowers, occurring in small clusters, are greenish-white and less than 6 mm. (¼ inch) long. They are perfect and regular, with four petals and sepals and eight stamens. The fruit is a shiny, spheroidal, small black berry with a long stipe. It is two-celled and has from two to four hard seeds.

Allthorn has a nearly continuous distribution in southeastern Arizona, southern New Mexico, southern and southwestern Texas, and Mexico. In southwestern Arizona, southeastern California and northwestern Mexico the variety **tenuispina** has a discontinuous range, and is found in isolated pockets in the desert mountains. **Koeberlinia spinosa** ranges in elevation from 440 to 1470 meters (1500 to 5000 ft.) in the desert and desert grassland habitats. It grows in sand or rocky soils on mountain slopes and foothill or intermountain plains.

Koeberlinia spinosa photographed near Bowie, Arizona. Elevation 3800 ft. This plant is about seven feet high and twelve feet across.

Two of the Allthorn's berries are visible here among the stout spines.

Koeberlina spinosa is not known in cultivation, but it would serve the same role in the desert garden as **Holacantha emoryi** and **Canotia holacantha.** These three, along with **Condalia** species, would provide a massive, heavily armed shrub or small tree for contrast in backdrop planting. None of the above is known to be in the nursery trade, so they must necessarily be grown from seed or transplanted. Cultural requirements are the same for all. All are very drought-hardy plants.

References:

Benson & Darrow, Trees & Shrubs of the Southwestern Deserts

Kearney & Peebles, Arizona Flora

Little, E. L., Southwestern Trees, USDA Handbook No. 9

—J. H. W.

EDITOR'S NOTES

(Continued from page 15)

The movie "Cactus Flower" was seen by a couple of garden members—who couldn't identify the cactus. Looked more like a euphorbia, they said. Can some movie-going reader supply the answer? Whatever the plant was, Ingrid Bergman watered it much too often. Our female member's "tsk, tsk" was heard all over the theatre.

Help wanted: Our volunteer librarian, Eleanor Radke, needs at least two volunteers to help her check and catalogue books. The arrival of another huge part of Mr. Richter's library, his gift to the Garden, makes it essential that Mrs. Radke have assistance now, so that most of the cataloguing can be done this spring. Please phone the Garden if you can spare us a day or half-day each week.

TWENTY-ONE YEARS GROWING

The top picture was taken in 1949, the bottom one just now. You can see that the cacti and trees have grown considerably. All plants show good desert growth. So have our buildings—Visitors' Building, Glass House and Cactus Lath House. Wonder how it will look in 1991? (Too bad that time has taken two of the large saguaros visible in the right rear of the old photo.)

Arizona Wildflower

BLUE BLANKET
Eriastrum diffusum

Polemoniaceae
Phlox Family

For a three-week period during March through June, Blue Blanket lives up to its name. It can cover a rocky hillside with sky-blue half-inch flowers, and, because growth is no taller than two to six inches, it lies over the hillside like a blanket.

Eriastrum diffusum is an annual, erect and diffusely branches. The narrow leaves are no longer than three-quarters of an inch, and, along with the stems, are slightly downy. A striking feature, which makes field identtification easy, is the woolliness or "cobwebby" look of the dense flower heads. This is caused by thickly-set long and fine white hairs which almost obscure the sepals surrounding the blue corolla. The corolla is a quarter-inch tube spreading out to five regular lobes about a quarter-inch long each. Five stamens are inserted midway in the corolla throat.

In Arizona **Eriastrum diffusum** is found at 1000-5500′ elevations on plains and mesas where there is a slight to medium drainage angle, since the plant requires good drainage. Distribution ranges from northern Coconino and Mohave Counties south to Graham, Cochise, Santa Cruz and Pima Counties. The accompanying pictures were taken in mid-April in Peralta Canyon, Superstition Mtns., Pinal County.

Distribution in the Lower Sonoran Desert ranges in the north from southern Nevada and Inyo County of California to southern Utah and Texas, and south to northern Chihuahua, Sonora and Baja California, Mexico.

REFERENCES

Kearney & Peebles, Arizona Flora
Shreve & Wiggins, Vegetation & Flora of the Sonoran Desert

— L.D.

Blue Blanket: can you think of a better name for sky-colored *Eriastrum diffusum.*

GARDEN ACTIVITIES

FEBRUARY

Sun.	1st	LECTURE—Unusual Leaf Succulent Plants	3 P.M.
Tues.	3rd	CACTOMANIACS meeting	8 P.M.
Wed	4th	CLASSES—Cultivation of Trees and Shrubs	3 & 8 P.M.
Thurs.	5th	LECTURE—Unusual Leaf Succulent Plants	3 P.M.
Sat.	7th	NATURE TRIP—White Tank Mts. (40 mi.)	8:30 A.M.
Sun.	8th	LECTURE—Cacti of the Americas	3 P.M.
Wed.	11th	CLASS—(afternoon) Field Trip, Pinnacle Peak	8:30 A.M.
Thurs.	12th	LECTURE—Cacti of the Americas	3 P.M.
Sat.	14th	CLASS—(evening)—Field Trip, Pinnacle Peak	8:30 A.M.
Sun.	15th	LECTURE—Cacti of Mexico	3 P.M.
Sat.	21st	ENTRIES DUE FOR ANNUAL CACTUS SHOW	5 P.M.
Sun.	22nd	to March 1st.—23rd ANNUAL CACTUS SHOW	dly. 9-5 P.M.

MARCH

Tues.	3rd	CACTOMANIACS meeting	8 P.M.
Thurs	5th	LECTURE—Cacti of Arizona in Flower	3 P.M.
Sat.	7th	NATURE TRIP—Apache Lake (60 mi.)	8:30 A.M.
Sun.	8th	LECTURE—Arizona Wildflowers	3 P.M.
Wed.	11th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs.	12th	LECTURE—Arizona Wildflowers	3 P.M.
Sun.	15th	LECTURE—Arizona Trees and Shrubs	3 P.M.
Wed.	18th	CLASSES—Desert Succulent Plants	3 & 8 P.M.
Thurs.	19th	LECTURE—Arizona Trees and Shrubs	3 P.M.
Sun.	22nd	LECTURE—Arizona Birds and Animals	3 P.M.
Wed.	25th	CLASSES—Cultivation of Succulent Plants	3 & 8 P.M.
Thurs.	26th	LECTURE—Arizona Birds and Animals	3 P.M.
Sun.	29th	LECTURE—Arizona Scenics	3 P.M.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXIV March, 1970 No. 3

REG MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor

LILLIAN DIVEN, Associate Editor

Volume XXIV | March, 1970 | No. 3

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ALL CACTUS SHOW PHOTOS BY FRED BASELT

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REPORT OF THE 23RD ANNUAL CACTUS SHOW

The Garden had another wonderful show, with good weather except for the last day. We had a record 13,414 visitors whose comments, heard by our volunteer hosts and hostesses, included "a colorful show", "such beautiful plants", "good arrangements", "what tiny button gardens, and so well proportioned", "what a large number of arrangements with dried desert materials", "this is my third trip to the Show," "couldn't you run the Show another week—my aunt is coming from New York". We could go on indefinitely quoting these enthusiastic remarks.

The excellent judges were: Mr. and Mrs. Don Skinner of Los Angeles for the cacti and succulents; Mrs. S. R. Stevens, Mrs. G. G. Williams and Mrs. C. H. Morris for arrangements and dish gardens; Mr. and Mrs. Salvatore Macri for art entries; Charles R. Conley for all photography. Their decisions made the exhibitors quite happy, and the visitors also concurred with the judges' decisions. We are most fortunate to have capable judges of many categories in our adjacent communities.

Public interest in the Show was swelled by the good coverage given it by our co-sponsor the Phoenix Gazette, its companion daily Arizona Republic, the Scottsdale Daily Progress, Tempe Daily News, Mesa Tribune, and the weeklies in surrounding towns. Sunset Magazine, Horticulture, and others had accounts of the Show. Your Editor appeared on four TV programs relating to the Show. We appreciate the efforts these various media made in publicizing the Show.

I still marvel at how our staff and volunteers were able to place a record 1101 exhibits from 112 exhibitors into a space that was filled last year with 732 exhibits. This was an increase of nearly 60%. It filled the auditorium and the porches of the adjoining patio. We certainly are in need of additional auditorium space for our Show, since it grows larger every year.

For the first time, the parking lots could not take care of all the cars. Many people were turned away because of the lack of parking space, so it seems we will have to enlarge the area this summer.

It would be impossible for our staff of seven to attempt such a large show except for the generosity of 65 volunteers who gave their time, for a day, several days, or the whole week, in order to make the show a success. They acted as hosts, hostesses, did sales, typing, clerking, counting, directing traffic, answering thousands of questions, and generally "selling" the Garden. To the following helpers we extend our thanks: Mr. and Mrs. Frederick Baselt, Mr. and Mrs. Cliff Brown, Dr. and Mrs. Robert Buzzard, Mr. and Mrs. James Byerly, Mr. and Mrs. William Clark, Mr. and Mrs. W. G. Cook, Mrs. Roy Cooper, Lillian Diven, Mr. and Mrs. Warner Dodd, John P. Earle, Florence and Norman Fickeisen, Virginia Fraser, Mr. and Mrs. Otto Friedrichs, Leah Gartlein, Florentine Gebert, Mr. and Mrs. Charles Genasci, Peg Gill, Mrs. Carl Groschke, John B. Hales, Mr. and Mrs. Frank Hennessy, Jean Hillhouse, Mr. and Mrs. Arthur Holt, Verjean Houck, Mildred Hunt, Meta Jadamowitz, Mr. and Mrs. Bert Jinneman, Mrs. Jack Kerridge, Mrs. Fred Kleinbaum, Mr. and Mrs. Dugan Lewis, Mr. and Mrs. J. C. McDougall, Mr. and Mrs. Salvatore Macri, Bob Moulis, Mr. and Mrs. Paul Neumann, Laura Nixon, Dorothy O'Rourke, J. O. Paulson, C. C. Pidgeon, Maribel Pratt, Mr. and Mrs. K. H. Quick, Arlie Quinn, Ruth Reed, Florence Reeves, Mary Orr Russell, Cleo Schliep, Mr. and Mrs. Edwin Schrieber, Mr. and Mrs. Clifford Schroeder, Ella A. Schultz, Hazel Smith, Donald Squires, Leila Turner, Neil Van Ness, Demitrios Vlachos, Mrs. Don Walter.

An interesting side to the Show, unknown to the visitors, is that the volunteers have always been served a hot meal at noon by a catering service. Because of changes in management of the service in the past few years, one of our staunch members, Mrs. J. C. McDougall this year offered to plan menus and organize a group to serve "gourmet" meals during this year's Show. The group served 198 delicious meals over nine days at a cost of fifty-nine cents per person per meal! Our congratulations to Thelma and her co-chairmen for our tasty lunches. We are looking forward to their culinary specialities in 1971.

Again this year the Show was a financial success. Increases in voluntary admissions, sales, sale of plants purchased and donated by members, and sale of Nature Walk pamphlets gave us a total that was a welcome 33% over last year's.

TWENTY-THIRD ANNUAL CACTUS SHOW AWARD WINNERS

SWEEPSTAKES AWARDS

CACTI: Alan Blackburn, Tucson.
LEAF SUCCULENTS: James A. Robbins, Tucson.
ARRANGEMENTS: Valerie Nelson, Scottsdale.
ARTS: Agnes M. Holst, Phoenix.

TROPHY WINNERS

BEST CACTUS: Alan Blackburn
MAMMILLARIA: Agnes M. Holst
CRESTED CACTUS: Emma Oscarson, Phoenix.
COLLECTION OF 5 CACTI: Mrs. Alan Blackburn, Tucson.
LEAF SUCCULENTS: J. B. Hales, Phoenix.
COLLECTION OF 5 LEAF SUCCULENTS: Clifford Schroeder, Tempe.
DISH GARDEN: Emma Oscarson
CENTERPIECE: Valerie Nelson
ARRANGEMENT AGAINST THE WALL: Mrs. Ted Chambers, Apache Junction.
BUTTON ARRANGEMENT: Mrs. Ted Chambers
PATION PLANTER: James A. Robbins
EDUCATIONAL: J. B. Hales
DESERT WOODS: Mrs. Pat Kelley, Phoenix
BLACK AND WHITE PHOTO: Hal Moore, Scottsdale
COLOR PRINT: Agnes M. Holst
TRANSPARENCY: M. Genevieve Evans, Phoenix
OIL PAINTING: Adrienne Roscoe, Apache Junction
WATERCOLOR: Adrienne Roscoe
ANY OTHER ART MEDIUM: April McMannon, Phoenix
JUNIOR ENTRY: David Clay, Scottsdale.

RIBBON AWARD WINNERS

SECTION I, CACTI. CLASS A, POTTED PLANTS

1. OPUNTIA, 1st, Nancy Clarke. 2nd, Mrs. Ted Chambers. 3rd, Clifford Schoeder. 4th, Biven Stewart.
2. CEREUS. 1st and 3rd, Alan Blackburn. 2nd and 4th, Nancy Clarke.
3. ECHINOCEREUS. 1st, Alan Blackburn. 2nd, Clifford Schroeder. 3rd, J. B. Hales. 4th, L. Bremer.
4. REBUTIA. 1st, John D. Robbins. 2nd, Earl Pierson. 3rd, Clifford Schroeder. 4th, Alan Blackburn.
5. CHAMAECEREUS. 1st, Biven Stewart. 2nd, Paul Enz. 3rd, Alan Blackburn. 4th, Mrs. Richard Enz.
6. LOBIVIA. 1st, Alan Blackburn. 2nd, Nancy Clarke. 3rd, Clifford Schroeder. 4th, Hildegard Nase.
7. ECHINOPSIS. 1st and 3rd, Alan Blackburn. 2nd, Clifford Schroeder. 4th, Nancy Clarke.
8. ARIOCARPUS. 1st, Alan Blackburn. 2nd, Clifford Schroeder. 3rd, J. B. Hales. 4th, L. Bremer.
9. STENOCARPUS. 1st, 3rd and 4th, L. Bremer. 2nd, Clifford Schroeder.
10. FEROCACTUS. 1st and 4th, Alan Blackburn. 2nd, L. Bremer. 4th, Lillian Lugibihl.
11. ECHINOCACTUS. 1st and 4th, Alan Blackburn. 2nd and 3rd, L. Bremer.
12. GYMNOCALYCIUM. 1st, J. B. Hales. 2nd, 3rd and 4th, Alan Blackburn.
13. ASTROPHYTUM. 1st, J. B. Hales. 2nd, Bob Moulis. 3rd, Alan Blackburn. 4th, Nancy Clarke.
14. THELOCACTUS. 1st, 3rd and 4th, L. Bremer. 2nd, Earl Pierson.
15. ECHINOMASTUS. 1st and 4th, Clifford Schroeder. 2nd, Alan Blackburn. 3rd, L. Bremer.
16. CORYPHANTHA. 1st and 4th, Alan Blackburn. 2nd and 3rd, L. Bremer.
17. MAMMILLARIA. 1st, Agnes M. Holst. 2nd, L. Bremer. 3rd and 4th, Nancy Clarke.
18. NOTOCACTUS. 1st, Nancy Clarke. 2nd, Alan Blackburn. 3rd, Ann Christensen. 4th, Clifford Schroeder.
19. NEOPORTERIA. 1st, 2nd and 3rd, Nancy Clarke. 4th, J. B. Hales.
20. PARODIA. 1st, 2nd and 3rd, Alan Blackburn. 4th, Hildegard Nase.
21. SEEDLINGS. 1st, John D. Robbins. 2nd, J. B. Hales. 3rd and 4th, Clifford Schroeder.
22. ANY OTHER SPECIES. 1st, Betty Blackburn. 2nd, Norman Fickeisen. 3rd, Carl Simmons. 4th, Clifford Schroeder.
23. MELOCACTUS. 1st, 2nd and 3rd, L. Bremer.
24. TURBINOCARPUS. 1st and 3rd, L. Bremer. 2nd, Ann Christensen
25. PEDIOCACTUS. 1st, 2nd and 3rd, Alan Blackburn.
26. OREOCEREUS. 1st, Alan Blackburn. 2nd and 3rd, Clifford Schroeder.
27. CEPHALOCEREUS. 1st, Laura Nixon. 2nd, Clifford Schroeder. 3rd, Bob Moulis. 4th, Nancy Clarke.
28. DOLICHOTHELE. 1st, 2nd and 3rd, Alan Blackburn.
29. ESPOSTOA. 1st, 2nd and 3rd, Nancy Clarke.
30. NEOCHILENIA. 1st, 2nd and 3rd, John D. Robbins.
31. FRAILEA. 1st, 2nd and 3rd, John D. Robbins.

CLASS B, CRESTED CACTI.

1. OWN ROOT. 1st, Emma Oscarson. 2nd, and 4th, L. Bremer. 3rd, J. B. Hales.
2. GRAFTED. 1st and 2nd, Bob Moulis .3rd, J. B. Hales. 4th, Mrs. Russell Slingerland.

CLASS C, MONSTROSE PLANTS. 1st, Clifford Schreoder. 2nd, Nancy Clarke. 3rd, J. B. Hales. 4th, Warner Dodd.

CLASS D, GRAFTED PLANTS. 1st, Nancy Clarke. 2nd, J. B. Hales. 3rd and 4th, John D. Robbins.

CLASS E, COLLECTIONS (5 different species of a genus). 1st, Betty Blackburn. 2nd, L. Bremer. 3rd, Alan Blackburn. 4th, Clifford Schroeder.

SECTION II. SUCCULENTS OTHER THAN CACTI. CLASS A, POTTED PLANTS.

1. AEONIUM. 1st, Eva Vichules. 2nd, Emma Oscarson. 3rd, Biven Stewart. 4th, Mrs. Russell Slingerland.
2. AGAVE. 1st and 3rd, Clifford Schroeder. 2nd, J. B. Hales. 4th, Bob Moulis.
3. ALOE. 1st and 4th, James A. Robbins. 2nd, Mrs. Russell Slingerland. 3rd, Clifford Schroeder.
4. BRYOPHYLLUM. 1st, Mary Forman.
5. CRASSULA. 1st, 2nd and 4th, James A. Robbins. 3rd, John D. Robbins.
6. DUDLEYA. 1st, Mrs. J. J. Belford. 2nd, Clifford Schroeder.
7. ECHEVERIA. 3rd, Mrs. A. M. Bailey.
8. EUPHORBIA. 1st, Lillian Lugibihl. 2nd, John D. Robbins. 3rd, Mrs. Russell Slingerland. 4th, James A. Robbins.
9. GASTERIA. 1st, 2nd and 4th, J. B. Hales. 3rd, James A. Robbins.
10. HAWORTHIA. 1st and 3rd, Bob Moulis. 2nd and 4th, J. B. Hales.
11. KALANCHOE. 1st, Mrs. Marge Meyer. 2nd, Emma Oscarson. 3rd, Adena Leth.
12. LITHOPS. 1st, J. B. Hales. 2nd, James A. Robbins. 3rd and 4th, John D. Robbins.
13. MESEMBRYANTHEMUM. 1st, 2nd and 3rd, James A. Robbins.
15. SEDUM. 1st, Clifford Schroeder. 2nd, Mrs. Russell Slingerland, 3rd, Virginia Carnahan.
16. STAPELIA. 1st, 2nd and 4th, Mary Forman. 3rd, James A. Robbins.
17. YUCCA. 1st, 2nd and 3rd, Clifford Schroeder.
18. SEEDLINGS. 1st, 2nd and 4th, Clifford Schroeder. 3rd, Mrs. J. J. Belford.
19. ANY OTHER SPECIES. 1st, J. B. Hales. 2nd, Isabelle Holt. 3rd, James A. Robbins.
20. CONOPHYTUM. 1st, 2nd and 3rd, Carl S. Simmons.
21. BROMELIAD. 1st, Bob Moulis. 2nd and 4th, Clifford Schroeder. 3rd, John D. Robbins.
22. CUCURBITACEAE. 1st, 2nd and 3rd, James A. Robbins.
23. ADROMISCHUS. 1st, 2nd and 3rd, James A. Robbins.
24. FAUCARIA. 1st, 2nd and 4th, James A. Robbins. 3rd, Mrs. Russell Slingerland.
25. OPHTHALMOPHYLLUM. 1st, 2nd and 3rd, James A. Robbins.
26. DINTERANTHUS. 1st, 2nd and 3rd, James A. Robbins.

CLASS B, COLLECTIONS. 1st and 3rd, Clifford Schroeder. 2nd, J. B. Hales. 4th, James A. Robbins.

SECTION III. DESERT TREES AND SHRUBS

CLASS A, TREES. 1st, L. Bremer. 2nd, Barbara Reiff. 3rd, J. B. Hales.

CLASS B, SHRUBS. 1st, J. B. Hales. 2nd and 4th, Mary Forman. 3rd, Clifford Schroeder.

CLASS D, SEEDLINGS. 1st, 2nd and 3rd, Clifford Schroeder.

CLASS E, ANY OTHER DESERT PLANTS. 1st, James A. Robbins. 2nd, Clifford Schroeder. 3rd, Mary Forman.

SECTION IV, ARRANGEMENTS. CLASS A, DISH GARDENS.

1. CACTI. 1st and 4th, Emma Oscarson. 2nd, Valerie Nelson. 3rd, Lillian Lugibihl.
2. OTHER SUCCULENTS. 1st, Emma Oscarson. 2nd, J. B. Hales. 3rd, Isabelle Holt. 4th, Betty Blackburn.
3. CACTI AND OTHER SUCCULENTS. 1st, Emma Oscarson. 2nd, Marge Meyer. 3rd, Jacqueline Evans. 4th, Alan Blackburn.

CLASS B, TERRARIUM. 1st, Virginia Carnahan. 2nd, Mrs. Russell Slingerland. 3rd, Adena Leth. 4th, Valerie Nelson.

CLASS C, CENTERPIECES.

1. CACTI. 1st, Valerie Nelson. 2nd, Mrs. R. I. Turner.
2. OTHER SUCCULENTS. 1st, Mrs. R. I. Turner. 2nd, Dottie Battiest. 3rd, Valerie Nelson.
3. CACTI AND OTHER SUCCULENTS. 1st, Valerie Nelson. 2nd, Mrs. R. I. Turner. 3rd, J. Thomas Beck.
4. NATURAL DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Cleo Schliep. 3rd, J. B. Hales. 4th, Isabelle Holt.
5. MEXICAN INFLUENCE. 1st, Adena Leth. 2nd, Mrs. John Alsever. 3rd, Jacqueline Evans.
6. AMERICAN INDIAN INFLUENCE. 1st, Adena Leth. 2nd, Isabelle Holt.
7. ANY OTHER. 1st, Mrs. John Alsever.

CLASS D, ARRANGEMENTS ON OR AGAINST WALL.

1. CACTI. 1st, Mrs. R. I. Turner. 2nd, Isabelle Holt. 3rd, Mary Nelson. 4th, Dottie Battiest.
2. OTHER SUCCULENTS. 1st, Mrs. R. I. Turner. 2nd, Isabelle Holt. 3rd, Dottie Battiest. 4th, Mrs. Russell Slingerland.
3. CACTI AND OTHER SUCCULENTS. 1st, Mrs. R. I. Turner. 2nd, Valerie Nelson. 3rd, Isabelle Holt. 4th, Florentine Gebert.
4. NATURAL DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Mrs. R. I. Turner. 3rd, Mrs. Claude Burt. 4th, Pat Kelley.
5. MEXICAN INFLUENCE. 1st, Mrs. R. I. Turner. 2nd, Mary Probasco. 3rd, Valerie Nelson.
6. AMERICAN INDIAN INFLUENCE. 1st, Mrs. R. I. Turner. 2nd, Valerie Nelson. 3rd, Isabelle Holt.
7. ANY OTHER. 1st, Edna B. Girard. 2nd, Mrs. John Alsever. 3rd, Pat Kelley. 4th, Valerie Nelson.

CLASS E, CORSAGES.

1. CACTI. 1st, Mrs. Ted Chambers. 2nd, Dottie Battiest.
4. NATURAL DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Adena Leth.
5. MEXICAN INFLUENCE. 1st, Mary Probasco.
7. ANY OTHER. 1st, Mary Probasco.

CLASS F, BUTTON ARRANGEMENTS.

1. CACTI. 1st, Valerie Nelson. 2nd, Bonnie Rodriguez.
2. OTHER SUCCULENTS. 1st, Valerie Nelson. 2nd, Bonnie Rodriguez.
3. CACTI AND OTHER SUCCULENTS. 2nd, Bonnie Rodriguez. 3rd, Valerie Nelson.

4. NATURAL DRIED DESERT MATERIAL. 1st, Betty Blackburn. 2nd, Mrs. John Alsever. 3rd, Edna B. Girard. 4th, Valerie Nelson.
5. MEXICAN INFLUENCE. 1st, Mary Probasco. 2nd, Valerie Nelson, 3rd, Bonnie Rodriguez.
6. AMERICAN INDIAN INFLUENCE. 1st, Mrs. Ted Chambers. 2nd, Valerie Nelson. 3rd, Bonnie Rodriguez.
7. ANY OTHER. 1st, Mrs. Ted Chambers. 2nd, Mary Probasco. 3rd, Bonnie Rodriguez.

CLASS G, MINIATURE ARRANGEMENTS.

2. OTHER SUCCULENTS. 2nd, Betty Schrieber. 4th, Clifford Schroeder.
4. NATURAL DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Mary Probasco. 3rd, Cleo Schliep. 4th, Betty Schrieber.
5. MEXICAN INFLUENCE. 1st, Mary Probasco. 2nd, Betty Schrieber. 4th, Valerie Nelson.
6. AMERICAN INDIAN INFLUENCE. 1st, Valerie Nelson.
7. ANY OTHER. 1st, Valerie Nelson. 2nd, Mrs. Ted Chambers. 3rd, Mary Probasco. 4th, Betty Blackburn.

CLASS H, SMALL ARRANGEMENTS.

3. CACTI AND OTHER SUCCULENTS. 1st, Betty Schrieber.
4. NATURAL DRIED DESERT MATERIAL. 1st, Edna B. Girard. 2nd, Valerie Nelson. 3rd, Betty Schrieber. 4th, Mary Probasco.
5 MEXICAN INFLUENCE. 3rd, Valerie Nelson.
6. AMERICAN INDIAN INFLUENCE. 1st, Mary Probasco. 2nd, Valerie Nelson. 3rd, Betty Schrieber.
7. ANY OTHER. 1st, Mrs. Ted Chambers. 2nd, Mrs. John Alsever. 3rd, Valerie Nelson.

CLASS J, HANGING BASKETS. 1st, Adena Leth. 2nd, George C. Walters. 3rd, Virginia Carnahan.

CLASS K, STRAWBERRY JARS. 1st, Mrs. Russell Slingerland. 2nd, J. B. Hales. 3rd, Marge Meyer.

CLASS L, PATIO PLANTERS. 1st. James A. Robbins. 2nd and 4th, Eva Vichules. 3rd, Virginia Carnahan.

SECTION V, ARTS (DESERT SUBJECTS)

CLASS A, BLACK AND WHITE PHOTOGRAPHY. Flowers: 1st, Hal Moore. 2nd and 3rd, Agnes M. Holst. 4th, Hobart Pribbenow. Plants: 1st, Hal Moore. 2nd and 3rd, Agnes M. Holst. Landscapes: 1st and 2nd, Hobart Pribbenow. Fauna: 1st, Hal Moore. 2nd, John H. Walter.

CLASS B, COLOR PHOTOGRAPHY.

1. COLOR PRINTS. Flowers: 1st and 4th, Agnes M. Holst. 2nd, John D. Robbins. 3rd, L. Bremer. Plants: 1st, Agnes M. Holst. 2nd, Anna M. Engl. Landscapes: 1st and 3rd, John Biddle. 2nd, Mrs. H. L. Thomson.
2. TRANSPARENCIES. Flowers: 1st, Hal Moore. 2nd, Beth Swanson. 3rd, Grace Moore. 3rd and 4th, James A. Robbins. Plants: 1st, Dorothy O'Rourke. 3rd, Agnes M. Holst. 4th, Frederick C. Baselt. Landscapes: 1st, M. Genevieve Evans. 2nd, Dorothy O'Rourke. 3rd, Hal Moore. 4th, Lorraine Matthes. Fauna: 1st, Laurie Kriz. 2nd, John H. Walter. 3rd, Lorraine Matthes.

CLASS C, OIL PAINTINGS. Flowers: 1st and 2nd, Eve Zielinski. 3rd, Helen Kinnas. 4th, Linda Umphrey. Landscapes: 1st and 3rd, Adrienne Roscoe. 2nd, Donald Denton. 4th, Ruth B. Jennings.

CLASS D, WATERCOLORS. 1st Fauna, Isabelle Holt. 1st Landscape, Adrienne Roscoe. 2nd, Ruth Blomeyer. 3rd, Mrs. H. Meredith. 4th, M. Ruth Noland.

CLASS E, DRAWINGS. 2nd and 3rd, Isabelle Holt.

CLASS F, ANY OTHER MEDIUM. 1st, April McMannon. 2nd, Helen Kinnas. 3rd, Ruth Blomeyer. 4th, Mary Probasco.

CLASS G, NATURAL DESERT WOODS. 1st, Pat Kelley. 2nd, Alina Schoedel. 3rd, Mrs. Charles Genasci. 4th, Mary Probasco.

SECTION VI, EDUCATIONAL EXHIBITS. 1st, J. B. Hales. 2nd, James A. Robbins. 3rd, Isabelle Holt.

SECTION VII, JUNIOR CLASS. Art: 1st, Greg Beroza. 1st and 2nd, Johnny Strader. 3rd, David Strader. Plants and Arrangements: 1st, David Clay. 1st, 1st and 2nd, Cathy Enz. 1st, Brad, Jeff and Dennis Fairall. Four firsts, 2nd and 3rd, Pat Nelson. Two firsts, three 2nd, Mark Nelson.

Arizona Wildflower

GOLDENEYE
Viguieria deltoidea

Compositae
Sunflower Family

Goldeneye is close to Brittlebush in the Sunflower Family. Both are low, rounded shrubs; both have yellow composite flowers; in both of them the flowers rise on long stems above the rest of the plant; both blossom in the spring. People sometimes confuse the two plants, but it is really not hard to tell them apart.

If the leaves are strongly triangular, dark green, stiff and a bit sandpapery, the plant is Goldeneye. If the leaves are ovate, pale gray-green, soft and tending to curl, it is Brittlebush. Goldeneye stems are rough and slightly scratchy because of the short stiff hairs covering the plant. Brittlebush stems, which give the plant its common name, break off easily, and are smooth and somewhat velvety to the touch. The yellow of Goldeneye flowers tends toward orange; in Brittlebush the flowers are lemon-yellow.

Normally, the Brittlebush blooms earlier and stays in bloom later than Goldeneye, but Goldeneye has a second flowering in the autumn. There are other distinctions, but these should be enough to make it easy to tell the two apart.

Viguieria deltoidea is a many-branched subshrub (woody only toward the base) one to two-an-a-half feet tall, and up to four feet wide. The leaves are deltoid, noticeably triangular, and are from three - quarters to one-and-a-quarter inches long. Both leaves and stems are covered with very small stiff and sharp hairs. The peduncles which lift the flower above the leaves carry one to three flowers each. Flowers are an inch in diameter, with the disk flowers in the center rising conspicuously high above above the rays.

Flowering in spring is March to June. The second flowering is from September to November. The plant is found on dry mesas and rocky slopes, usually in the open, but sometimes also in the shade of trees and higher bushes.

In Arizona **Viguieria deltoidea** grows

from Oatman in Mohave County, southern Yavapai County and western Gila County to Pima and Yuma Counties at elevations up to 3500 feet. Distribution outside Arizona includes southern Nevada, southern California and northwest Mexico.

Although nowhere abundant, Goldeneye is not rare. The accompaning pictures were taken in Peralta Canyon in the Superstition Mountains east of Phoenix.

REFERENCES:

Benson & Darrow, Trees and Shrubs of the Southwestern Deserts

Kearney & Peebles, Arizona Flora

Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.

GARDEN ACTIVITIES

MARCH

Tues.	3rd	CACTOMANIACS meeting	8 P.M.
Thurs	5th	LECTURE—Cacti of Arizona in Flower	3 P.M.
Sat.	7th	NATURE TRIP—Apache Lake (60 mi.)	8:30 A.M.
Sun.	8th	LECTURE—Arizona Wildflowers	3 P.M.
Wed.	11th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs.	12th	LECTURE—Arizona Wildflowers	3 P.M.
Sun.	15th	LECTURE—Arizona Trees and Shrubs	3 P.M.
Wed.	18th	CLASSES—Desert Succulent Plants	3 & 8 P.M.
Thurs.	19th	LECTURE—Arizona Trees and Shrubs	3 P.M.
Sun.	22nd	LECTURE—Arizona Birds and Animals	3 P.M.
Wed.	25th	CLASSES—Cultivation of Succulent Plants	3 & 8 P.M.
Thurs.	26th	LECTURE—Arizona Birds and Animals	3 P.M.
Sun.	29th	LECTURE—Arizona Scenics	3 P.M.

APRIL

Wed.	1st	CLASSES—Identification of Trees and Shrubs	3 & 8 P.M.
Thurs.	2nd	LECTURE—Arizona Scenics	3 P.M.
Sun.	5th	LECTURE—Unusual Leaf Succulent Plants	3 P.M.
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Thurs.	16th	LECTURE—Cacti of the Americas	3 P.M.
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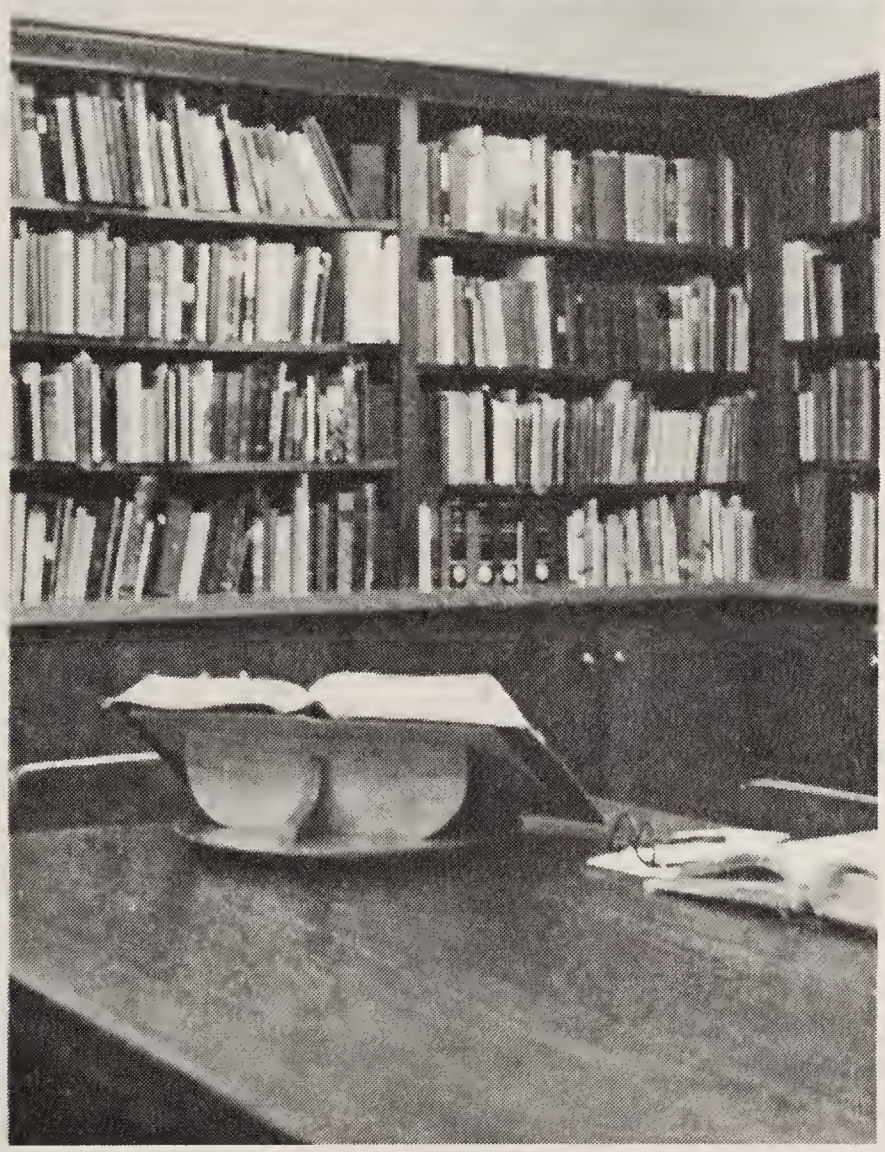
Sun.	19th	LECTURE—Cacti of Mexico	3 P.M.
Thurs.	23rd	LECTURE—Cacti of Mexico	3 P.M.
Sun.	26th	LECTURE—Cacti of Arizona in Flower	3 P.M.
Thurs.	30th	LECTURE—Cacti of Arizona in Flower	3 P.M.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXIV April, 1970 No. 4

RICHTER MEMORIAL LIBRARY



REG MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor

LILLIAN DIVEN, Associate Editor

Vol. XXIV | April, 1970 | No. 4

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Editor's Notes

Dedication of the Richter Memorial Library on April 26th was another milestone in the progress of the Garden as an institute for the study and cultivation of desert plants.

The building of a library, already seen as an eventual necessity for the Garden, became a matter of growing interest when our former Director, W. Taylor Marshall, at his death in 1957, left his library of books on succulent plants to the Garden.

In 1960, Max Clemens Richter, of Santa Barbara, California, indicated to your Editor that, if we had a library building, he might leave his extensive collection of rare books to the Garden. It was Mr. Richter's conviction that his library ought to be well and often used by scholars and researchers. Our Board was approached and approved construction of a Spanish-style stucco building (designed by Les Mahoney and built by Dean Coffman) which was completed in February 1968.

In the meanwhile, Mr Richter had acquired all of the excellent library of Scott Haselton of Pasadena, California, the founder, editor and publisher of the Cactus and Succulent Journal (of America). Several universities here and abroad offered impressive sums of money for Mr. Richter's augmented library, but he remained firm in his commitment to the Desert Botanical Garden.

Mr. Richter has been gradually transferring his books to the new library building, and since its completion five van-loads of books have made the trip from Santa Barbara to the Garden. One more load will be moved to the Garden in 1971.

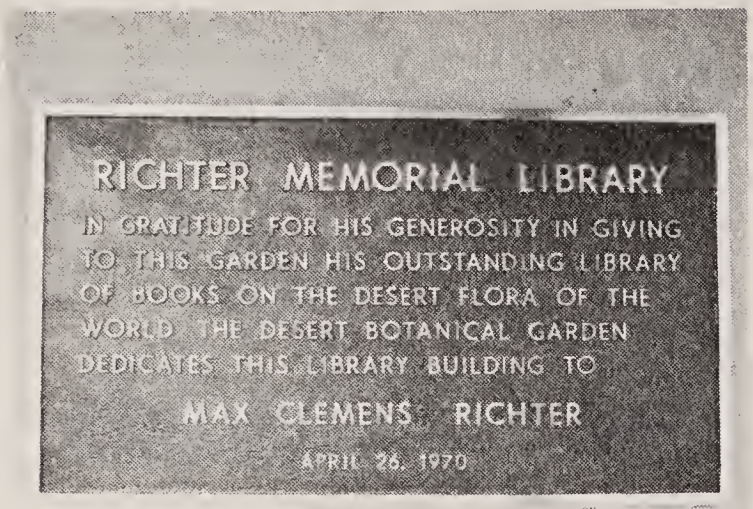
Even before the dedication, the filling bookshelves generated enthusiasm in many of the Garden's friends. We have received many new books and checks for books, some given in memory of departed friends. Mr. Emmett Klopfenstein, of Covina, California, has given us his $1500 collection of books on desert flora which will be used in our planned herbarium extension. Mr. and Mrs. Hector Moir, recently of Kauai, Hawaii, have placed their collection of books on Hawaiian flora here on long-term loan.

It has been a thrilling experience to watch the construction of the building, then to watch the rare books filling the shelves, and now to have been present at the formal dedication of the Richter Memorial Library. And it is gratifying to hear the excited remarks of scholars, researchers and students when they find on our shelves books and periodicals they have eagerly sought for years.

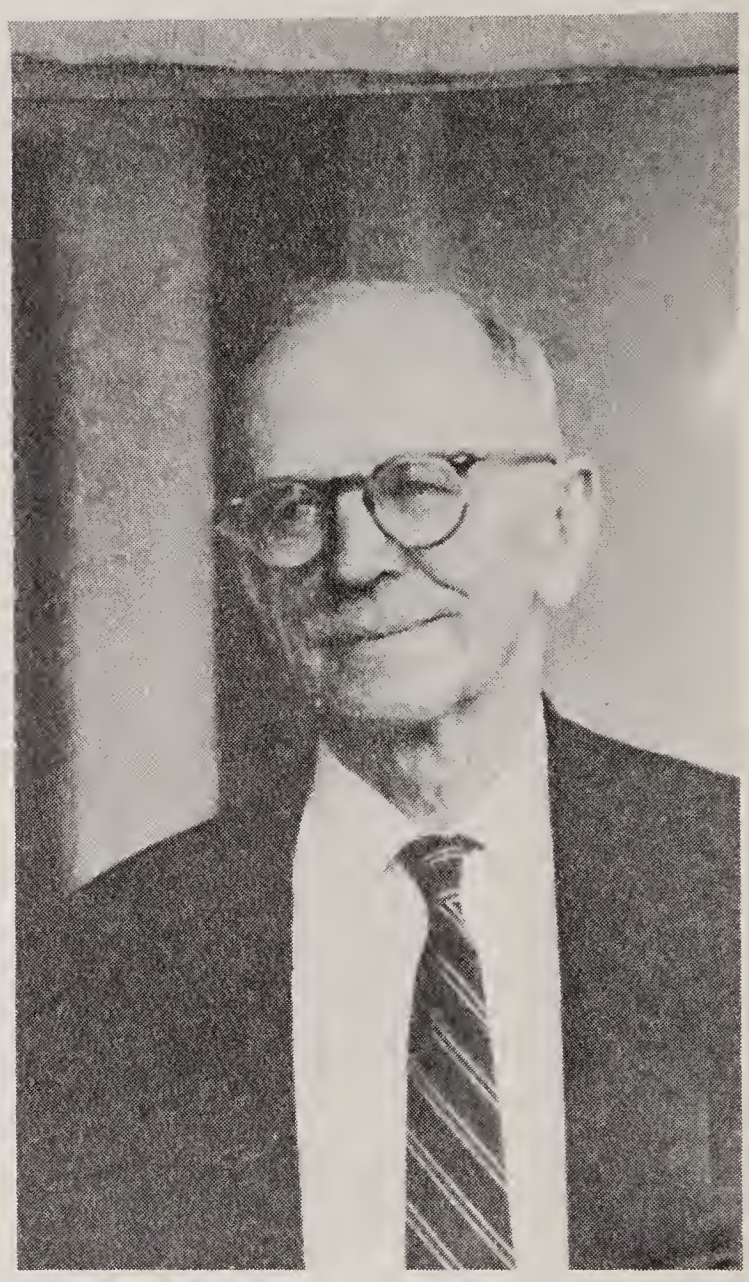
The dedication ceremonies took place on Sunday afternoon, April 26th, in the patio between our Auditorium and the Library, and was even better attended than we had planned for. The program was as follows: Invocation by Rev. W. S. Boice of the First Christian Church in Phoenix. Welcome by

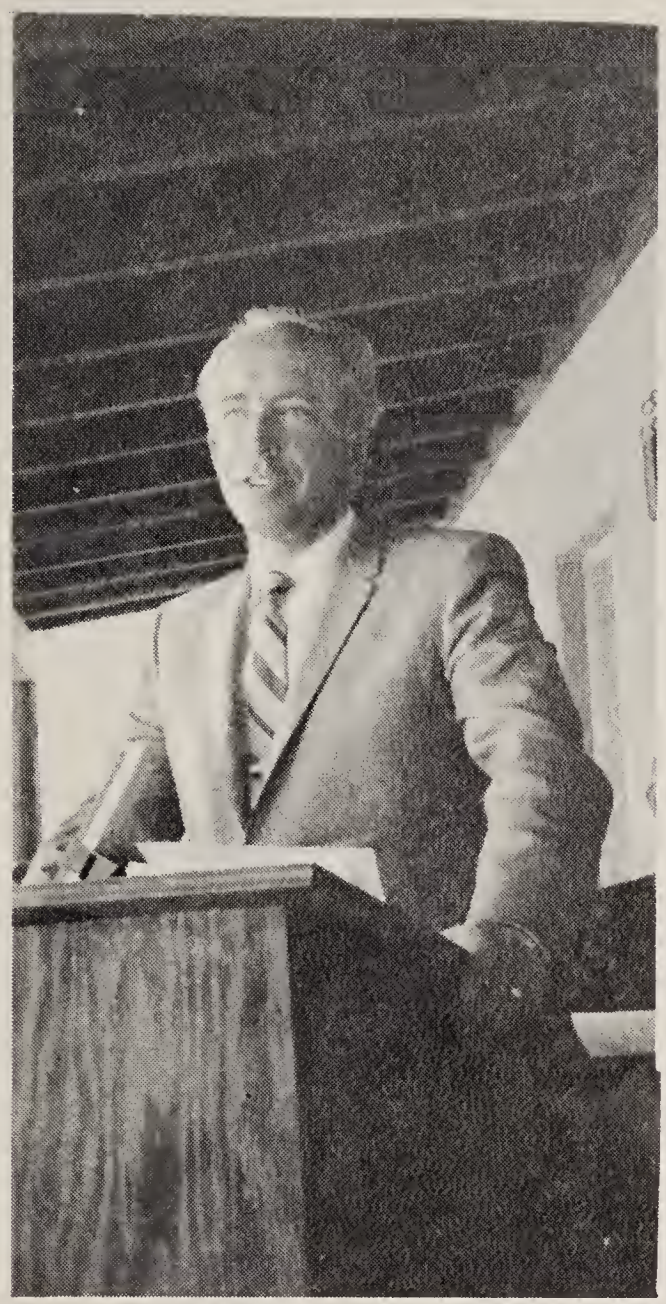
(Continued on page 45)

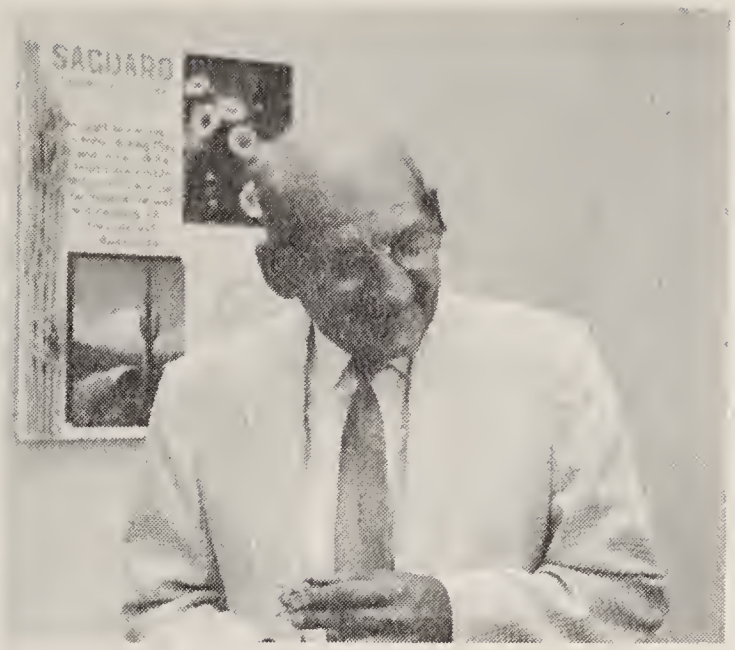
LIBRARY DEDICATION DAY


RICHTER MEMORIAL LIBRARY
IN GRATITUDE FOR HIS GENEROSITY IN GIVING
TO THIS GARDEN HIS OUTSTANDING LIBRARY
OF BOOKS ON THE DESERT FLORA OF THE
WORLD THE DESERT BOTANICAL GARDEN
DEDICATES THIS LIBRARY BUILDING TO
MAX CLEMENS RICHTER
APRIL 26, 1970

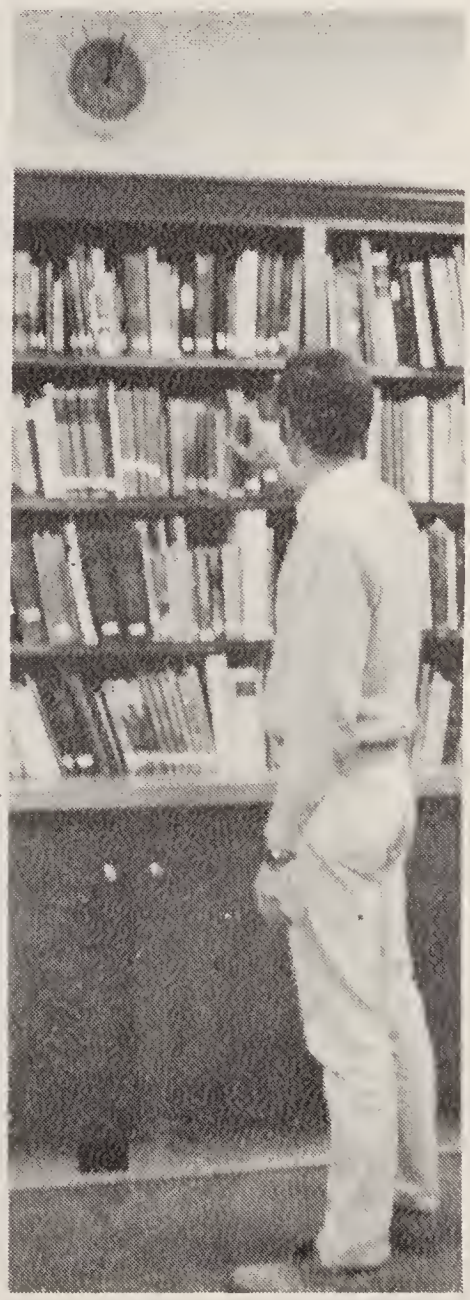
Below is a view of the Richter Memorial Library from the Auditorium-Library patio. The stucco walls are a light sand color, posts and beams are stained dark brown and the roof is made of terra cotta tiles from Mexico. Hidden by the tall cactus is the location of the plaque shown above, which will tell Garden visitors about Mr. Richter's gift. At right is a recent photo of Mr. Richter, taken at his home in Santa Barbara.

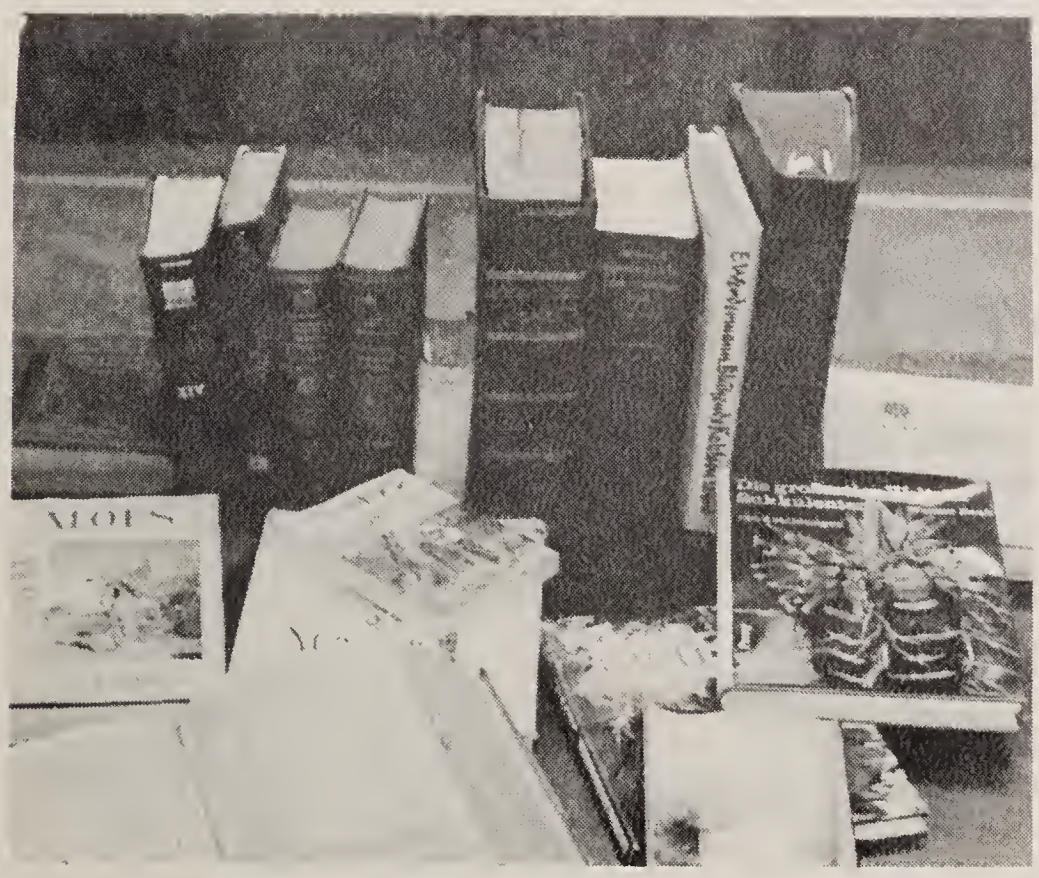


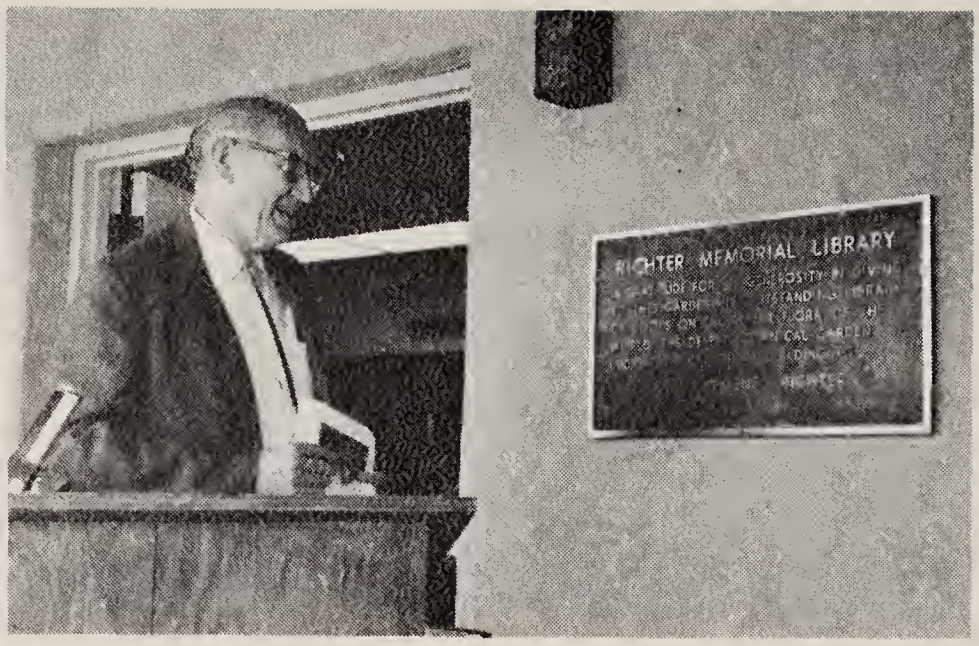


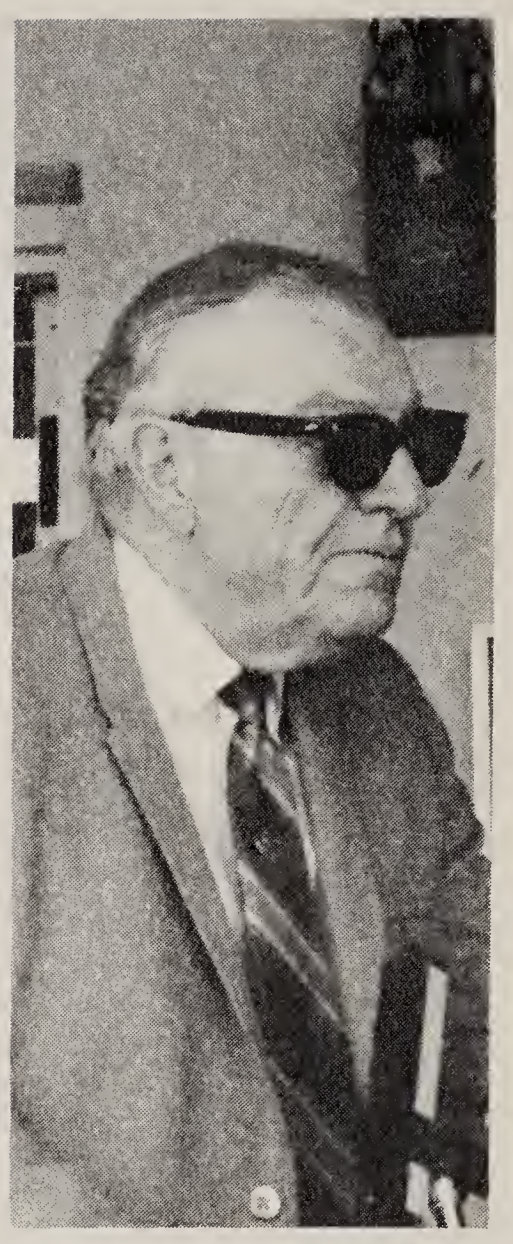


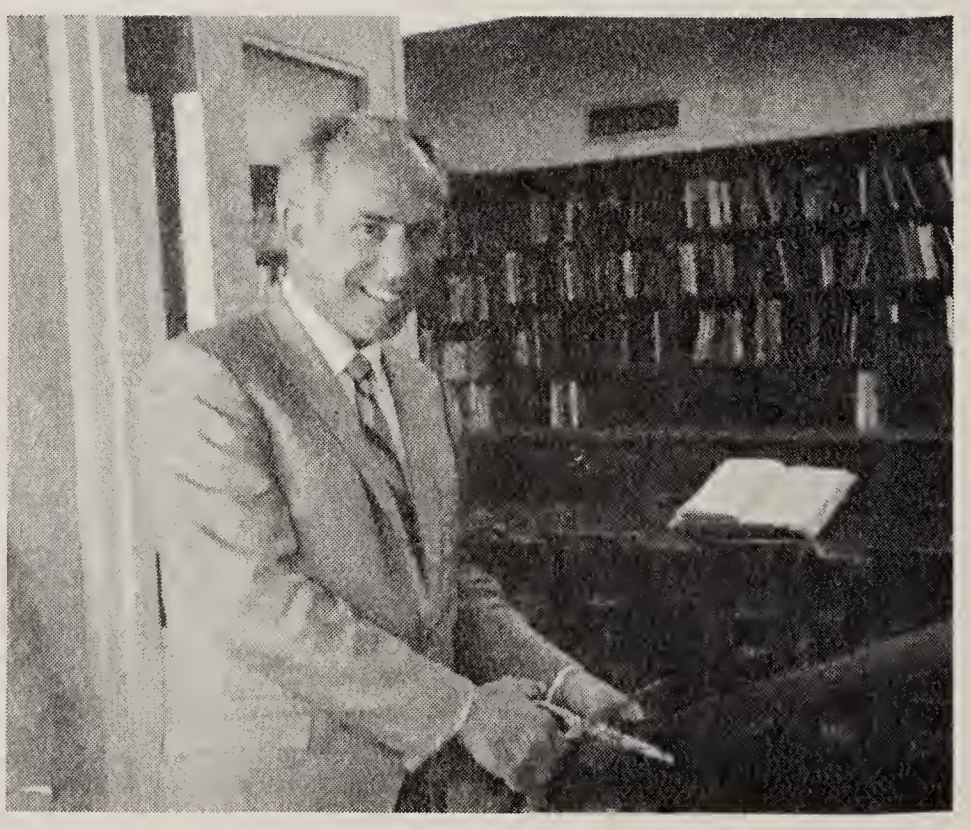
At left, Mayor Driggs dedicates the Library. Above, W. Hubert Earle, the Garden's Director. Below, some of the Richter books, and a look at the bookshelves.











Pictured top left: Dr. Shofstall has just unveiled the dedicatory plaque. Lower left: Chairman John Rhuart reads over the autobiographical sketch Mr. Richter wrote for Mr. Rhuart to read at the dedication. Above right: Chairman John H. Eversole, photographed during his welcoming remarks. Below: Mayor Driggs of Phoenix cutting the red ribbon and officially opening the Library.

ASPECTS OF THE DESERT

The 1121 acres of Papago Park are in the middle of Arizona's most populous area. The park contains a zoo and a golf course, but it remains natural desert with unusual red buttes and many cacti. The Desert Botanical Garden occupies over 150 acres of the park on perpetual lease.

Arizona Wildflower

PINCUSHION FLOWER
Chaenactis stevioides

Compositae
Sunflower Family

Call this Pincushion Flower, if you want to use the most common name, or Morning Bride if you prefer another, but, as a memory-aid, you can hardly beat the comment we heard recently: "Looks like the fancy white bathing cap my wife bought."

You will find **Chaenactis stevioides** in bloom from February to May throughout Arizona at elevations from 1000 to 6500 feet. It is very common on dry mesas and plains, where it is likely to be seen beneath shrubs, particularly the creosote bush (**Larrea tridentata**).

C. stevioides is a loosely-branched annual four to twelve inches high, slightly leggy when it is growing under shrubs but more compact when found growing in the open. The leaves are finely dissected and sparsely covered with fine soft hairs which make the foilage look grayish-green.

Like other members of the Sunflower Family, its "flower" is really a head composed of many small flowers. It has no rays—the "petals" of a daisy—but around the circumference of the head there is a ring of enlarged outer florets.

This is charming wildflower, absolutely pure white, each head an inch and a quarter to an inch and a half across, and an inch high. The fluffy look is due to the curling anthers that project above the outline of the flower head.

Jaeger notes "This is one of the favorite food plants of the large red-headed soldier beetle (**Lytta magister**) which in spring is

Pincushion Flower blooms pure white in the desert from February onward.

Above, you can see the rounded and tightly packed flower head of the Pincushion Flower. Below right, a close-up showing the curly anthers.

found in great numbers on the stony flats."

Distribution is in both the Lower and Upper Sonoran Zones, from Wyoming and Idaho south to New Mexico, southern California and Sonora.

REFERENCES
Dodge, 100 Desert Wildflowers
Jaeger, Desert Wild Flowers
Kearney & Peebles, Arizona Flora
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

—LD

EDITOR'S NOTES

(Continued from page 39)

John H. Eversole, Chairman of the Garden's Executive Board. Autobiographical notes sent to us by Mr. Richter were read by John H. Rhuart, President of the Executive Board. Acceptance and unveiling of the dedicatory plaque by W. P. Shofstall, State Supt. of Public Instruction. Dedication speech by Mayor John Driggs of Phoenix, who then cut the ribbon spanning the open doors and officially opened the Richter Memorial Library.

Desert Trees and Shrubs

Above: *Koeberlinia's* small round berries. Top right: *Canotia's* fruit is beaked and woody, and splits along many lines. Lower right: *Holacantha's* fruit in unmistakable tight clusters that cling to the tree for years, turning black with age.

In previous articles about three Arizona plants commonly called Crucifixion Thorn, there was no attempt to differentiate. These species, **Koeberlinia spinosa, Canotia holacantha** and **Holacantha emoryi** are often seen in different areas of the state and just as frequently assumed to be the same plant, so it may be useful to compare the three for the purpose of easy identification.

Holacantha emoryi occupies most of the southwestern quarter of Arizona, while **Koeberlina spinosa** is found primarily in the southeastern quarter. **Canotia holacantha** extends in a northwesterly direction across the central portion of Arizona. While the distributional ranges are distinct for the most part, a very interesting occurence is present in north-central Yuma County. Here, in a few mountain ranges and surrounding plains, all three species are found. In addition to regional distribution, there is also an elevational range difference segregating **Holacantha emoryi** from the other two species. It is generally found at

elevations below 2000 ft. (610 meters) while **Canotia** and **Koeberlina** ordinarily range from 2000 to 5000 feet (1525 meters).

Unlike the other two, **Canotia holacantha** is most commonly found on rocky hill slopes rather than on the alluvial soils of the plains.

The easiest means of distinguishing the plants is to examine the fruit. In most instances this can be done from afar. With **Canotia** the fruit is a woody, long-beaked, elliptical capsule which remains on the plant for a long period. The fruits are single or in open clusters, and easily seen at some distance. The much smaller **Holacantha** fruits, on the other hand, are in very dense clusters, each fruit having from five to ten segments. These tight clusters remain on the tree for several years, becoming much darker with age. These, also, are discernible at a distance. The fruit of **Koeberlinia** is a single berry, occurring in small clusters. They are only evident at close range, and are not long persistent on the plant.

Canotia and **Holacantha** become small trees, while **Koeberlinia** forms a spreading shrub. These trees are spiny plants of interesting growth habits and should be utilized to be much greater extent in desert plantings.

A comparison of the shapes of these three thorny plants. Top left: A typical *Koeberlinia,* 5′ tall, broad and dense. Lower left: *Holacantha* about 7½′ tall (average is 10′), with a more open shape, stout thorns and black clusters of old fruit. Right: This *Canotia* is a tall one, 18′ — size ranges from 6′ to 18′. It is narrower and has a more graceful shape than the other two. Note the separate unclustered fruit close to the ends of many twigs.

Compare the branches of all three: *Koeberlinia* (left) has short, stout and sharply pointed spines with black tips, growing at right angles to the branch. *Canotia* (center) has flexible, much longer spines with the fruit showing near the tips. *Holacantha* (right) has stiff spines, longer than *Koeberlinia's,* set at much less than a right angle to the branch.

GARDEN ACTIVITIES

APRIL

Wed.	1st	CLASSES—Identification of Trees and Shrubs	3 & 8 P.M.
Thurs.	2nd	LECTURE—Arizona Scenics	3 P.M.
Sun.	5th	LECTURE—Unusual Leaf Succulent Plants	3 P.M.
Tues.	7th	CACTOMANIACS meeting	8 P.M.
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Thurs.	30th	LECTURE—Cacti of Arizona in Flower	3 P.M.

MAY

Tues.	5th	CACTOMANIACS Pot Luck	6:30 P.M.
Sat.	9th	NATURE TRIP—Bumble Bee (75 mi.)	8:30 A.M.

No Lectures or Classes given May through October. The Garden is open daily 9 A.M. to 5 P.M., including week-ends and holidays.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXIV May, 1970 No. 5

REG-MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P. O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXIV | May, 1970 | No. 5

Arizona Cactus and Native Flora Society

EXECUTIVE BOARD

Chairman of Board—John H. Eversole
President—John H. Rhuart
Vice President—Edward Burrall
Treasurer—Tom Goodnight
Secretary—Angela Bool
Chief Counsel—Richard B. Snell

Reg Manning, Charles Mieg, Mrs. Mildred May, Mrs. F. M. Feffer.

ADVISORY BOARD

Chairman, Les Mahoney

James Cahill, Mrs. Geraldine Eliot, Mrs. Charles Gilliland, Mrs. Homer Lininger, Miss Eleanor B. Sloan, Donald W. Hutton

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Cover: Verbena wrightii

Desert Botanical Garden of Arizona

STAFF

Director—W. Hubert Earle
Horticulturist—John H. Weber
Secretary—Barbara Worbington
Bookstore—Ann Shelstad
Curator of Herbarium—J. Harry Lehr
Maintenance and Bookstore—Donald C. Shelstad
Maintenance and Bookstore—Lynn Trainum
Student Horticulturists—Lyle McGill, David Squires

Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

The FISCAL YEAR was as usual in the black with attendance second highest on record and income for the first time exceeding one hundred thousand dollars. Income was $6,700 over the anticipated budget whereas expenditures were $2,000 lower. The anticipated 1970-71 budget is based on the same 10 percent projected increase that has been used in past years. Comparison columns with the previous year are shown on the report. (See page 54). For the first time current memberships exceed one thousand.

In the report listed under Assets, the Valley National Bank Savings Account and Certificates of Deposit total just a hundred dollars less than $19,000. This is the building fund which will be used in the coming year for the construction projects programmed. Also under Assets, $8,000 is set aside to initiate a retirement program for the permanent garden staff.

Liabilities were about $1,400 higher than the year before, due primarily to delays caused by transferring the Garden's account to a closer branch bank.

Under Income, Retail Sales from the Bookstore were more than double the purchases for Bookstore Resale and with a higher inventory at the end of the period.

Listed under Expenditures, cost of publication of the Saguaroland Bulletin increased very little while memberships increased by 120.

Each person visiting the Garden gave a voluntary contribution averaging .14 cents and made purchases averaging .69 cents making a total of .83 cents per person, a gain of .08 cents per person over the previous year.

As noted on page 56, our visitors have come from all points of the compass. This check of our Guest Book was made to determine the point of origin and number of visitors, both foreign and domestic. Some surprises are clearly evident.

You won't find them listed under "Assets" in the Financial Report, but our Volunteers are real assets to the Garden. During the last year twenty-six Garden Members regularly gave us assistance in the bookstore and the library and elsewhere in the Garden. You can't estimate the value of the skills they put at the Garden's disposal, you can only be grateful the Garden has such friends. And of course the "Cactus Show regulars", sixty-five of them, who make the Garden run smoothly during its busiest week of the year, are also much-appreciated volunteers.

Where do you go on the fourth of July or for that matter on the third or fifth. If you are within a thousand miles of Los Angeles, you go to the Cactus and Succulent Society of America's Annual Cactus and Succulent Show, of course. Titled this year, "FIESTA DE CACTOS Y SUCCULENTES", it will take place on Friday, Saturday, and Sunday, July 3, 4, and 5 at the Los Angeles State and County Arboretum. The Arboretum is located at 301 North Baldwin Avenue, Arcadia, California and the show is free to the public. Hours are from 9:00 a.m. to 5:00 p.m. daily. There will be plant sales and hourly door prizes, so hurry, hurry, hurry and be in Los Angeles on July 3, 4, and 5.

MEMBERS' ANNUAL MEETING

On Sunday May 3rd the Members' Annual Meeting was held with President John Rhuart presiding and Secretary Angela Bool recording.

The mailed-in voting cards were tabulated by Mrs. F. M. Feffer, Mr. Paul Neumann, and Mrs. Salvatore Macri. Mr. John Eversole, Mr. Tom Goodnight, and Mrs. Mildred May, all incumbent board members, were re-elected for three year terms. There were six write-in votes, two of which were for a member already on the board.

Reports of the past year's activities and plans for 1970-71 were given by Director Hubert Earle. Future projects were enumerated and discussed. Attention was called to the fact that for the first time Garden memberships have exceeded one thousand. Also given were the approximate figures on fiscal year 1969-70 income and expenditures.

THIRTY-FIFTH ANNUAL BOARD MEETING

Members of the Executive and Advisory Boards, their wives and husbands, met in the El Concho Club, Hotel Westward Ho, on the evening of May 20th for the thirty-fifth annual board meeting with Chairman of the Board John Eversole presiding for the twenty-first year.

Minutes of the previous board meeting were read by Secretary Angela Bool. The financial report for the fiscal year 1969-70 was presented (see page 53).

The resignation of Advisory Board member Dr. Gordon B. Castle of Arizona State University was accepted at his request.

A committee of John Rhuart, Tom Goodnight, and Charles Mieg were appointed to check on the present and projected financial condition of the Garden prior to undertaking any additions to the staff or new projects.

A motion was made that Director Earle and Advisory Board member Mr. Donald Hutton meet with Mr. E. Miller concerning the routing of Papago East Freeway. One proposed route would take it down the length of the Garden's parking lot, dividing the Garden in half.

The Director made a report on the achievements of the past year and the goals for the year ahead. He was highly commended by the Board for his excellent direction of the Garden and its affairs.

1970 — 1971 GARDEN IMPROVEMENT PROGRAM

Botanist's dwelling
Herbarium
Reroof Auditorium
Grade & level road, blacktop road
Ramp to front entrance
Three bridges over 'Little Colorado' wash
Shaded Nursery
Chain barriers
Repaint parking lot lines
Yucca bed west of Archer House
Agave bed north of Succulent House
Construct Memorials
Blacktop remaining paths in Garden
Construct two protection walls at Visitors' Building entrance
Make additional identification labels for plants
Erect bird feeding station

ARIZONA CACTUS & NATIVE FLORA SOCIETY, INC.
SPONSORING THE
DESERT BOTANICAL GARDEN

FINANCIAL REPORT

5-1-69 — 4-30-70

		Comparison 1969-1970	Comparison 1968-1969
ASSETS			
Accounts Receivable		$ 532.91	$ 198.81
Inventory		9,824.28	9,157.96
Deposit Industrial Insurance		222.00	395.00
Cash			
Retirement		8,000.00	
Valley Nat'l Bank (Checking)		3,300.06	2,045.95
V.N.B. (2 Certificates of Deposit)		15,000.00	
V.N.B. Savings Account (Interest, included in total for period, $295.59)		3,899.54	8,103.95
1st Federal Savings, Certificate of Deposit		3,072.89	2,916.72
1st Federal Savings, Savings (Interest, included in total, $21.89).		1,180.47	346.49
Petty Cash & Cash Register Money		289.00	289.00
		$45,321.15	$23,453.88
In Trust			
Lois Earle Memorial Fund	$3,145.00		
Hiram Pratt Memorial	182.00		
Interest on above funds	288.98		
LIABILITIES			
Accounts Payable		$1,447.62	$ 59.55
Arizona State Withholding Tax		37.23	26.05
State Compensation Fund (Industrial)		37.98	33.06
		$1,522.83	$ 118.66
INCOME			
Retail		70,142.82	56,947.11
Wholesale, Garden Books		3,188.45	3,537.41
Wholesale, Seeds		97.00	586.26
Contributions		143.85	422.68
Voluntary Admissions		14,333.50	11,917.39
Memberships		6,456.50	5,313.50
Endowments		14,350.00	14,200.00
Library Fund		196.44	1,099.00
Miscellaneous		43.56	156.00
		$108,952.12	$94,470.59

EXPENDITURES

Purchases for Bookstore Resale	32,680.95	31,326.66
State Sales Tax (Retail)	2,112.32	1,708.40
Gross Wages	33,363.59	32,622.83
Payroll Taxes (Federal, Employer)	3,031.69	1,495.44
Office Supplies	3,787.83	2,081.75
Library—Books, Subscrip. & Supplies	707.84	234.21
Monthly Saguaroland Bulletin	1,516.71	1,471.79
Utilities	2,862.76	2,708.61
Fleet Auto Expense	1,278.48	1,206.39
Insurance—Life, Accident & Hospital	2,629.00	2,004.94
Insurance—(Industrial) State Compensation	257.83	642.03
Insurance—Fire, Theft, Liab., & Property Damage	1,806.24	1,454.00
Cactus Show	349.19	337.45
Travel, Entertainment, Public Relations & Misc.	988.34	1,123.17
Advertising	466.73	458.04
Garden & Building Maintenance	1,024.84	2,696.21
Lease	25.00	42.53
Wholesale Books	17.46	41.48
Capital Improvements: Three new ramadas, Library furniture, etc.	1,037.15	933.78
	$89,943.95	$87,173.00

ATTENDANCE of 101,120 persons contributed $14,333.50 or $.14 per person to Voluntary Admissions during 1969-1970.
SALES of $70,142.82 divided by 101,120 persons averaged $.69 per person.
MEMBERSHIPS—1,113 1969-1970 876 1967-1968
993 1968-1969 810 1966-1967

ANTICIPATED BUDGET 1970-1971

Bookstore Sales	$68,905	Purchases for Bookstore Sales	$35,800
Wholesale Seeds	708	General Operating	8,764
Wholesale Books	4,379	Bldg. & Improvements	3,261
Contributions	510	Auto Fleet Operation	1,400
Voluntary Admissions	14,418	Utilities	2,900
Memberships	6,428	Insurance	4,900
Endowment	17,182	Sales Tax	2,500
		Gross Wages	36,000
	$112,530		$95,525

(Continued on page 60)

ASPECTS OF THE DESERT

The silhouette of Camelback Mountain in Phoenix is remarkably like an immense sleeping camel. In this picture the western, or "nose", end of the mountain is shown, with the odd rock formation known as The Praying Monk. Blue palo verde trees in bloom fill the foreground.

FROM OUR GUEST BOOK

Where do the Garden's visitors come from? Below you will see part of the answer, but only part, because only 19 percent of the people who come to the Garden sign our Guest Book. It is probably correct to assume that "non-signers" are from Arizona and nearby states, and perhaps visitors who have been here before, as well as visitors who are too busy looking at other things to notice the Guest Book. However, from January 1, 1969 to January 1, 1970 the grand total signing was 19,084.

It is fun to compare. There were as many visitors from Japan as from Virginia, almost the same number from Australia and Washington D.C., the same number from Austria and from South Carolina, and more Swiss visitors than Vermonters.

UNITED STATES	
Arizona	3040
California	1766
Illinois	1158
Minnesota	953
Michigan	829
New York	821
Ohio	787
Iowa	777
Colorado	695
Wisconsin	577
Washington	549
Pennsylvania	506
Indiana	415
Missouri	389
Oregon	368
Nebraska	287
Kansas	285
New Jersey	280
Texas	264
Utah	240
Massachusetts	213
Montana	203
Oklahoma	195
North Dakota	190
Idaho	184
New Mexico	161
South Dakota	147
Connecticut	113
Florida	104
Maryland	104
Virginia	100
Wyoming	87
Tennessee	73
Kentucky	68
Nevada	64
Louisiana	61
Georgia	58
Alabama	54
North Carolina	49
New Hampshire	49
Arkansas	47
Alaska	41
Maine	41
Washington, D.C.	37
Hawaii	29
Mississippi	22
Delaware	21
Vermont	21
Rhode Island	20
South Carolina	13
Puerto Rico	5
Virgin Islands	1
TOTAL	17,417

FOREIGN:	
Canada	1095
Japan	100
England	75
Germany	66
France	52
Australia	36
Switzerland	34
Mexico	18
Sweden	17
Austria	13
Holland	12
Italy	11
Belgium	10
Israel	10
Denmark	9
New Zealand	9
Egypt	1
Africa (other countries)	9
Philippines	8
Scotland	7
Norway	7
Okinawa	7
Thailand	5
Spain	4
Russia	4
Ireland	4
India	4
Greece	3
Venezuela	3
Viet Nam	2
Yugoslavia	2
Bolivia	2
Turkey	2
Lebanon	2
Portugal	1
Argentina	2
Ecuador	1
Pakistan	1
Guam	1
Costa Rica	1
Brazil	1
Poland	1
Iraq	1
Samoa	1
Bermuda	1
Guyana	1
Czechoslovakia	1
Korea	1
Johnston Is.	1
Hong Kong	1
Jordan	1
Peru	1
Hungary	1
Chile	1
Br. Honduras	1
Guatemala	1
TOTAL	1,667

Mexican Cactus

MEXICAN PINCUSHION
Mammillaria conspicua

Cactaceae

As you begin hiking in the hills of southwest of Tehucan in the state of Puebla, Mexico, you start seeing beautiful small, round cacti that look like snowballs at the base of rocks. The sight is striking, and can see how it got its specific name **conspicua.**

The name first appears in Lemaire's "Les Cactees," Paris, 1868. In 1912 J.A. Purpus described the plant in Monatsschr. Kakteenk. 22:163. Then, in 1930 in An. Inst. Biol. Mex. Dr. Helia Bravo placed it in the genus Neomammillaria as **N. conspicua.** Strangely, she does not include it at all in her 1937 "Las Cactaceas de Mexico," although one nearly stumbles over the many specimens of this plant near Zapotitlan.

Britton & Rose carries the plant under Purpus' name, but groups it with **Neomammillaria elegans.** Borg (Cacti, 1937) calls it **Mammillaria conspicua,** as does Craig in "Mammillaria Handbook," 1944, and so does Backeberg in "Die Cactaceae," 1961.

This is a lovely little ball mamillaria, up to five inches in diameter, with descending central spines and closely appressed radials, all grayish-white in color.

The ball has a slightly depressed top and carries a ring of bright red three-quarter-inch flowers, followed by a ring of edible carmine-red fruit which are clavate in shape. The seeds are a light brown and about 1 mm. in length.

Mammillaria conspicua is a good looking plant for pot cultivation, or for outdoor desert gardens if given partial shade. It will grow very fast if given liquid fertilizers, but such treatment will shorten its life considerably. Without artificial stimulus it will live for twenty to twenty-five years under normal conditions.

Distribution: Throughout the state of Puebla, Mexico.

Type Locality: Zapotitlan, Puebla.

——WHE

Arizona Wildflower

WRIGHT'S VERBENA
Verbena wrightii

Verbenaceae
Vervain Family

This is obviously a verbena—the flat-topped flowering head and the shape of the individual flowers are closely similar to the popular garden verbenas. As a matter of fact, this pretty wildflower with good-sized bluish-lavender flowers and feathery leaves has itself been used as a garden plant in England, if not in this country.

Verbena wrightii is a perennial (though used as an annual in gardens) having four-sided stems like many other verbenas and most of the mint family. Several branched and spreading stems rise from the same base, and both stems and leaves are hairy. The leaves are twice pinnately lobed, with the lobes cut and toothed. Since they are hairy as well as much-divided, the leaves of **V. wrightii** have a definite feathery look.

The plant photographed here, at Brushy Basin, Gila County (elevation 4800 ft.), is ten to twelve inches high and two feet across. Normal height is from eight to twenty-four inches, with width corresponding. Flower heads are two and a half inches across, with individual flowers approximately three-quarters of an inch across.

The fragrant light blue-lavender flowers are five-lobed, each lobe slightly two-lipped. Blooming time depends on elevation — the plant shown here was photographed on April fifteenth, but since **V. wrightii** grows at elevations up to 7000 ft., a later date can be assumed for high locations.

Apparently this is an adaptable plant, for it is recorded as growing in moist rich loam, among boulders, in loose sandy or rocky soil, even in dry light adobe clay.

Distribution is from the Lower Sonoran Zone to part of the Arid Transition Zone. It is found from western Arizona near Wickenburg, to Colorado, Oklahoma and Texas, and south to San Luis Potosi in Mexico.

REFERENCES

Kearney & Peebles, Arizona Flora
McDougall, Grand Canyon Wild Flowers
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

——LD

Desert Trees and Shrubs

BERNARDIA
Bernardia incana

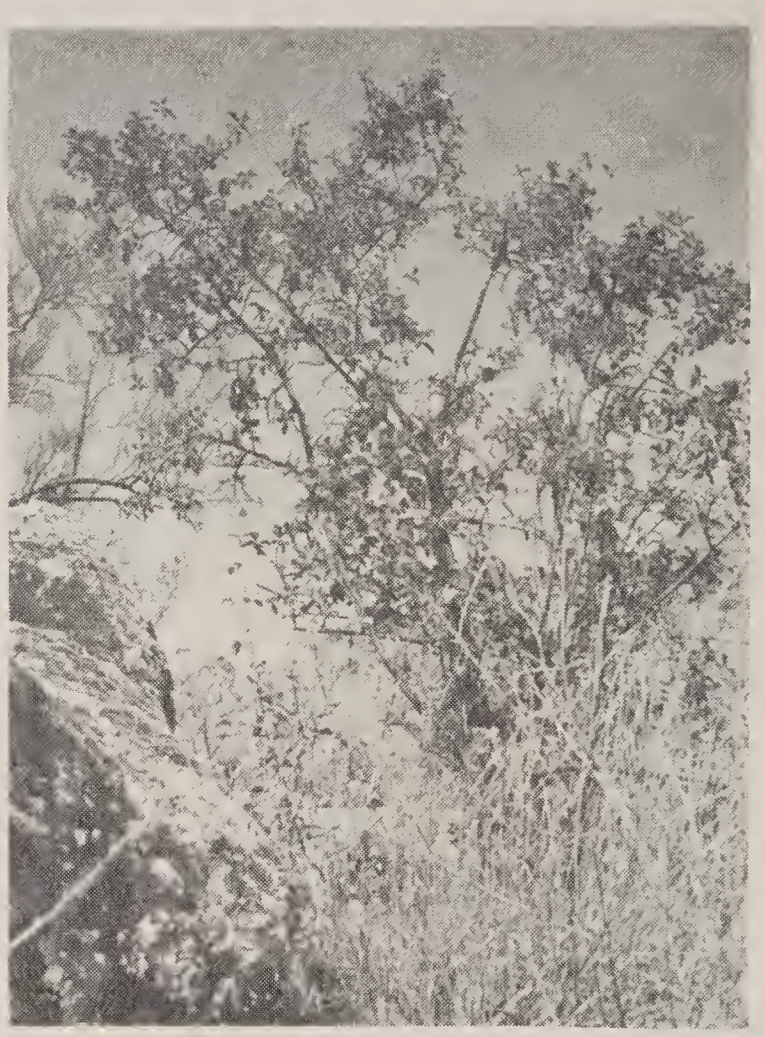
Euphorbiaceae
Spurge Family

Bernardia incana is a much-branched, stiff, spreading, deciduous shrub attaining in some situations a height of up to two meters. Leaves are gray-green below and darker above with a pubescence of short stellate hairs. Leaf margins are crenate. The leaves are alternate and are clustered on short branchlets. In shape, they are ovate to obovate and measure 5 to 25 mm. in length and 3 to 18 mm. in width. They are petiolate, bearing also very short purplish stipules. Flowering takes place in April and May and often into autumn. The flowers are unisexual and the staminate and pistillate flowers are generally borne on different plants. The flowers, which lack petals, are greenish in color. Staminate flowers are in axillary racemes and each flower is about 1 mm. long. Pistillate flowers are usually solitary or paired and terminal in position. These are about 2 mm. long. Staminate sepals number 3 to 4 and those of pistillate flowers number 5. Stamens are 3 to 7, borne on separate filaments. There are three short cleft styles. Capsules are three-lobed, but nearly spheroidal. They are dehiscent, releasing the three or fewer ovoid-globose seeds. The capsule is covered with stellate hairs and is 7 to 9 mm. in diameter. Seeds are pale brown and up to 6 mm. in diameter.

Bernardia incana is primarily a plant of the Lower Sonoran Zone and the margin of the Upper Sonoran Zone, with an elevational distributional range from 457 to 1067 meters (1,500 to 3,500 ft.). It grows in rocky canyons and on arid rocky slopes, commonly among large boulders. This species is found in southeastern California, Arizona, and in Baja California, Mexico. In Arizona it extends along the bottom of the Grand Canyon from near the junction of the Little Colorado River almost to Lake Mead in Coconino and Mohave counties. It is also found in a spotty distribution in Yavapai, Yuma, Maricopa, Pinal, Pima, and Cochise counties. Some of the mountains where this species has been reported are the Harcuvar, Harquahala, Kofa, Supersition, Mazatzal, Estrella, White Tank, and Tucson Mountains. It is present, but not common, on the north slope of Camelback Mountain in sight of metropolitan Phoenix.

Capable of growing under very adverse conditions, **Bernardia incana** seemingly

Scalloped edges and downy surface help identify *B. incana* leaves.



Above: the three-lobed fruit. At right: Bernardia's typical location between large boulders on a hillside.

prefers north exposures, often being limited to areas between and on the north and east sides of boulders. It is found on very rocky well-drained soils and while it has been successfully transplanted to the Desert Botanical Garden, it remains to be determined if it will establish permanently. In any case, having small insignificant flowers and a limited landscaping application, this plant would be of interest only to desert gardeners for its rarity. This is one of a dozen unusual shrubby species of the euphorbia family that are found in southern and southwestern Arizona. These are infrequently encountered and usually passed by without notice.

REFERENCES:

Benson and Darrow, Trees and Shrubs of the Southwestern Deserts.

Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert.

(Continued from page 54)

The following groups **met at the Garden:**

1	Dedication of Library	82
1	Cactus Show	13,414
6	Day Schools	164
110	Elementary Schools	5,504
12	High Schools	418
3	Conventions	529
1	Members' Meeting	16
7	Boy Scout Troops	88
12	Girl Scout Troops	496
10	University & College classes	326
6	Garden Clubs	126
10	Tours (Out of State)	384
3	Board Meetings & Dinner	42
1	Desert Institute	32
1	Crash Program (LEAP)	15
3	Guidance Schools	76
7	Cactomaniacs	396
15	Desert Plant Classes	223
46	Illustrated Lectures	795

Lectures were given to the following groups **away from the Garden:**

10	Field Trips	269
6	Conventions	436
1	University	100
2	Civic Groups	46
5	Garden Groups	272
1	T.V. Publicity for Cactus Show (ran three times)	

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXIV June-July, 1970 No. 6

REG MANNING

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Vol. XXIV | June-July, 1970 | No.6

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Chief Counsel.....Richard B. Snell

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Cover: Arizona Rosewood

All photographs by W. H. Earle, unless otherwise noted.

Desert Botanical Garden of Arizona

STAFF

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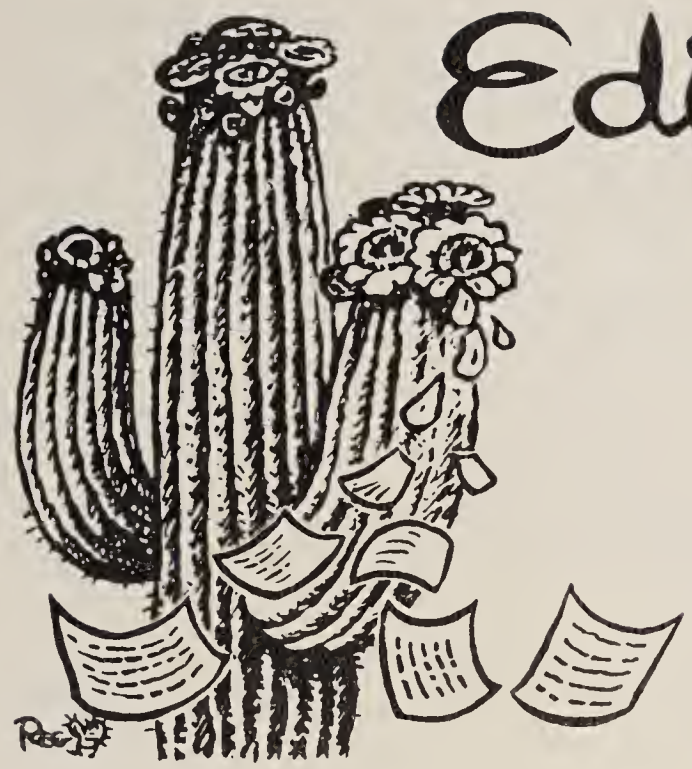
Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes



"What are the Garden's plans for the future?" Many members and Garden visitors ask us that today. The same question arose when the Garden opened in 1938, again when our past director took office in December 1946, and again when your present director assumed the position in August 1957. Planning for the Garden's future is rarely out of our minds.

We have been most fortunate in having a stable, concerned Executive Board; a dedicated staff willing to work; a most happy group of dependable volunteers who can be counted on to be on hand weekly or when needed. Lately several in this group voiced approval of forming an auxiliary, and plans are now being considered.

The May BULLETIN included a program of Garden improvement projects for our 1970 summer, scheduled for our regular staff and three college students. You will be glad to know that several of the projects have already been completed and work has started on others that we hope to complete by this fall.

To continue our growth, and to extend more service to visitors, students and botanists, we have to do some long-range planning. The following are some fifteen things that need to be done, some sooner than others, some bigger projects than others, yet all of them things that the Garden needs.

1. Double the size of our Visitor's Building. 2. Construct student interpretation trails. 3. Construct a student nature center. 4. Develop an automobile nature drive. 5. Build an air-conditioned greenhouse for leaf succulent plants. 6. Build a larger auditorium for meetings, lectures, shows by the Garden and other organizations. (The present auditorium to be used for exhibits.) 7. Construct a building for the sale of surplus and experimental plants. (There has been a great increase of interest in growing native plants, but no source of supply for interested gardeners.) 8. Enlarge the parking lot. 9. Provide some shaded areas for visitors' cars. 10. Plan trails for conducted bird walks in conjunction with the Audubon Society. 11. Install underground electric lines. 12. Install new and larger service water line. 13. Replace present barbed wire fence with eight-foot cyclone fence. 14. Construct clock tower in center of Garden. 15. Build student living quarters.

These are just a few of the many items we wish we now had, but we realize they will arrive in the future. You can expedite their arrival by making gifts or bequests to the Garden for any of these specific projects or for projects in general. Gifts to the Garden are tax-exempt, and if you are interested in one of the projects listed above the Garden will be happy to supply you with an itemized list of the costs.

(In the next issue I will talk about the Garden's ideas and plans concerning personnel and plants — botanical plants instead of the "physical plant" projects mentioned in this issue.)

Arizona Cactus

HEN & CHICKENS
Coryphantha vivipara
var. aggregata
Cactaceae

The small Biscuit (or Needle) Cactus, **Coryphantha vivipara** extends from Manitoba west to Alberta and southward through Arizona to Mexico. As its location changes, variations occur due to ecological conditions. Usually, C. **vivipara** is a solitary, small, simple plant found in grasslands and among junipers. In Arizona C. **vivipara var. aggregata** begins to form mounds up to twelve inches high and twenty-four inches across, with many small heads of two to two and a half inches diameter and two to three inches length.

The plants are at first solitary or simple, then, as they mature, small plants, the "hen's chickens" form at the base of the original plant until a mound is ultimately formed, hence the common name.

This is a very lovely little plant. The gray central spines are one-half to three-quarters inch long and tipped with pink or brown, blending in with the twenty to thirty gray-to-brown radial spines which are one-half to three-quarters inch long depending on the size of the stems. As the plant extends into limestone areas all the spines are mostly gray or nearly white in color.

The eye-catching flowers are pink to light lavender. They are quite large, one to one-and-a-half inches across, with the pointed petals spreading outward.

In the desert grasslands at 3000-5000 ft. the lovely flowers will remain open for several days in June and July.

The large green fruit is very smooth and sometimes tinged with purple. It grows to a length of three-quarters-of-an–inch to one inch. It erupts from the apex of the plant in August. This fruit has a sour taste, but is juicy enough to quench thirst.

This cluster was collected twelve miles north of Sonoita, Ariz. in January, 1958. It flowered heavily in the Garden in June.

The dark yellow seeds are eaten by birds and ants.

Moving this plant will cause flowering to cease for several years until it is re-established in its new setting. Cultivation is quite simple, the only requirement in a very hot desert garden is partial shade.

C. vivipara var. aggregata was first described as **Coryphantha bisbeeana** by Orcutt in Cactography 3. 1936. It has been carried by many authors as **Mammillaria vivipara aggregata,** and now Dr. Lyman Benson (Cacti of Arizona, 1969) has assigned it to **Coryphantha vivipara var. bisbeeana,** which name we will honor in future publications.

TYPE LOCALITY: not cited.

DISTRIBUTION: Southeast Arizona, New Mexico; Sonora, Mexico.

REFERENCES:

Benson, Cacti of Arizona
Earle, Cacti of the Southwest

—WHE

The 1½" pink flowers are large for the size of the plant.

FOR SMART GARDEN MEMBERS

We have just received the 1970 Christmas Card display catalogue from Western Tradition, which includes some of the loveliest Southwestern cards we have seen in years. Come in and order your cards now, and think how smug you'll feel next November when everybody else is rushing!

(The sale of cards, as well as other items in our bookshop, benefits the Garden, you know.)

Arizona Wildflower

LOVELY LARKSPUR
Delphinium amabile

Ranunculaceae
Buttercup Family

We Arizonans who flee the desert summer heat for the cool mountains in the north of the state are familiar with the tall blue larkspurs that grow in colonies in damp rich soil and look like the garden larkspur. So it is a surprise to find a larkspur that shows a preference for very dry well-drained desert locations, and blooms in spring instead of late summer.

Larkspurs are usually moisture lovers. As a matter of fact, the name of the family, Ranunculaceae (which includes such well-known plants as buttercup, columbine and anemone), is derived from the Latin meaning "little frog," and indicates the liking of most family members for damp, marshy places.

Delphinium amabile is the most xerophytic of all the North American larkspurs. To help withstand desert heat and drought its mainly basal leaves have become smaller than those of upland species, and the leaves are often completely withered by flowering time.

You will find **D. amabile** on very dry rocky desert knolls and mesas at elevations below 5000 ft. where there is excellent drainage. It is a perennial, with one or several stems, six to twenty-four inches tall, rising from a root crown with several woody roots.

There are five to twenty-five blossoms on each spike, or raceme, and although the color varies in local races of this species, it is usually, as in the flowers illustrating this article, a very pale whitish blue. These plants were found at an elevation of 2600 ft.

While mountain larkspurs are found growing in groups, **D. amabile** is less socially inclined. You will find two or three together, then no others nearer than five hundred feet.

As mentioned above, this species has many local races in Arizona, and the size and form of the plant varies greatly in response to varying ecological factors. At higher limits the color may be a deeper blue, or the leaves larger.

D. amabile is found in Arizona from Coconino and Mohave counties to Graham and Pima counties in the south. Its distribution includes southwestern Utah, Arizona and southern California. Flowering occurs from February to May.

REFERENCES

Armstrong, Field Book of Western Wild Flowers
Kearney & Peebles, Arizona Flora
McDougall, Grand Canyon Wild Flowers

—LD

ASPECTS OF THE DESERT

Tuzigoot National Monument is a Pueblo Indian ruin in central Arizona. The 3500' elevation in the upper desert gave a long growing season for crops in the fertile Verde Valley, the river supplied ample water for irrigation, yet Tuzigoot was inexplicably abandoned in the 14th century.

Desert Trees and Shrubs

ARIZONA ROSEWOOD
Vauquelinia californica

Rosaceae
Rose Family

Vauquelinia californica is a large evergreen shrub (or tree) attaining a height of 3 to 9 meters (10 to 30 ft.). It is a low branching shrub with spreading or ascending, unarmed, stiff branches. Bark and wood are dark brown. The stiff leathery leaves are bright to dark green and alternate in arrangement. They are linear-lanceolate, 4 to 10 cm. long, and 9 to 15 mm. broad. Tips are longpointed and the margins bear stout saw-like teeth. Commencing in May and continuing through June, there is a profusion of flowers in dense terminal clusters 5 to 8 cm. (2 to 3 in.) across. The clusters are slightly rounded or flat topped. Flowers are 8 to 9 mm. in diameter with elliptic, white petals about 3 mm. long and 2 mm. broad. Sepals are green. There are many (15 or 20) stamens and a five-parted stigma. Fruit, ripening in August, consists of a hard subwoody capsule formed from five partly united follicles. The long-persistent capsules are 6 mm. (¼ in.) long and split into five parts. Seeds are ovoid and flattened, the body being 1.5 to 2 mm. long and light yellow-brown in color. They are membranously winged below. The thin pale wing is little longer than the body.

Tiny white flowers of Vauquelinia *are here enlarged ten times.*

Arizona Rosewood is primarily a plant of the Upper Sonoran Zone and ranges in elevation from 760 to 1520 meters (2500 to 5000 ft.). It is found in canyons and on rocky ridges in the upper desert and oak woodland. In distribution **Vauquelinia californica** extends east and south from Arizona into New Mexico and southwestern Texas. It also extends south and west into Sonora and Baja California, Mexico. In Arizona it has a spotty distribution in the mid-region of the state from the Salt River to the Mexican boundary. It is found in Maricopa, Pinal, Pima, and Cochise counties.

Arizona Rosewood usually grows on rocky, dry, very well drained locations in full sun. It has, however, been field grown at the University of Arizona Experimental Farm in deep soils of finer texture and has been irrigated regularly. The plants have responded well under such culture resulting in large, full, well formed shrubs. This species is subject to aphid infestation during spring and early summer months. Leaf curl and tip damage will result if no control measures are implemented.

Vauquelinia californica could well be substituted for Oleander or Photinia in the

desert garden. While it is not showy in flower, it is similar in growth form and has a deep green color uncommon to most desert shrubs. It could be utilized as an individual specimen shrub or tree or be planted in multiples for screening purposes. A recommended plant for those gardeners interested in Arizona native trees and shrubs.

REFERENCES:

Benson & Darrow, Trees and Shrubs of the Southwestern Deserts
Little, E. L., Southwestern Trees

—JHW

Above left: Urn-shaped buds of Arizona Rosewood, about to open, five times enlarged. Right: Curled leaf, caused by aphids feeding on the undersurface of the leaf. Below: Typical rocky habitat of Arizona Rosewood, at 2500′, south of Superior, Arizona.

Mexican Cactus

OLD MAN CACTUS
Cephalocereus senilis

Cactaceae

This attractive plant seems to be a "must" for all collectors with its attractive long white hairs that can be combed and marcelled by fastidious owners. At least, directions in books on cactus culture for shampooing and combing C. senilis are so painstaking that hair-waving would be only a slight excess of zeal.

A native of the states of Hidalgo and Guanajuato, it was first described by Haworth (Philosophical Magazine, 1824) as Cactus senilis. De Candolle, in Prodr. 3:464, 1828 placed in the genus Cereus as Cereus senilis. In 1838 Lemaire, in Cact. Aliq. Nov. xii transferred the plant to the genus **Cephalocereus** because the blossoms appear in the cephalium at the top of the plant.

Old Man Cactus' white "hair" grows to a length of about three inches.

Cephalocereus senilis grows on very steep shaly hillsides. As many as twelve upright stems, reaching a height of thirty feet, rise from one base. The stems, with twelve to fifteen ribs, are ten to fifteen inches in diameter. They are quite succulent, without a tough woody central structure, so, unfortunately, people can easily slash a stem in two with a machete or large knife in order to get at the fruit and seeds at the top of the plant.

These plants are slow growers, and many are two hundred years old. Young plants grown from seed are plumb and straight in growth, while those that have germinated on the steep hillsides of their native habitat start their growth horizontally and then turn upward, somewhat like the letter J.

Cephalocereus senilis as it grows in nature is quite grey with a lighter cephalium. The juvenile plants are light green but later become darker. Descending spines are short and stiff and are covered by long hair.

When the plant is about twenty feet tall a cephalium develops along one side at the apex. In this cephalium the nocturnal flowers are borne. They are three inches long and two and a half inches broad, white with reddish exterior. They produce small one-inch to one-and-one-half-inch obovoid, rose-colored fruits with dark seeds.

This plant grows at about two to three thousand feet in humid atmosphere and may need protection in gardens in drier, lower elevations.

—WHE

Barranca de Venados, NNE of Pachuca, the capital of Hidalgo, Mexico, is the location of this photo of C. senilis. *Plants are 18-20' tall.*

RECENT LIBRARY ACQUISITIONS

This list is a more or less random selection from our recently acquired books (many of which were gifts to the Library), in order to acquaint you with the scope of the Library's material, and to mention a few that might be of special interest to Garden Members.

The Arid Zones, by Welton
How to Identify Plants, by Harrington and Durrell (1)
Reports on the Lands of the Arid Region of the United States, by John Wesley Powell (2)
Trees, Shrubs and Woody Vines of the Southwest, by R. A. Vines (3)
Cactus-feeding Insects and Mites, by Mann
Vegetative Key to the Cultivated Woody Plants of the Salt River Valley of Arizona, by Pinkava and Lehto
De la Cruz-Badiano Aztec Herbal of 1552, transl. by Gates (4)
Seventy-five Years of Arid-Land Research at the University of Arizona, bibliography by Paylore
Arizona Range Grasses, by Humphrey
Indian Corn in Old America, by Weatherwax
Using Plants for Healing, by Coons (5)

(1) Highly recommended for your own library. No other book we know teaches identification so simply and clearly. Paperback, published by Swallow Press, Chicago, Ill.
(2) Yes, the author is the famous Powell who explored the Colorado River in the 1870's. Harvard University Press reprint.
(3) Here, "The Southwest" means Arkansas, Louisiana, New Mexico, Oklahoma and Texas! Beautiful book, but of limited use in Arizona, if you've thought of buying it.
(4) and (5) These are fascinating in different ways: An Aztec remedy for timidity, a New England weed for nosebleeds. (We'd need the first before taking any of the others!)

HELP FROM THE SCOUTS

Girl Scouts and Boy Scouts, working for merit badges, helped us a lot this spring. In spite of windy days, one group filled bags with brittlebush seeds, and another carefully collected African daisy seeds for us to use next year. The Boy Scout planting included planting two-inch-tall saguaro seedlings under protecting creosote bushes. Nobody could ask for more diligent helpers.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXIV Aug.-Sept., 1970 No. 7

REG MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXIV | Aug.-Sept., 1970 | No. 7

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Cover: Back-lighted desert thistle with accidental "hexagons"

All photographs by W. H. Earle, unless otherwise noted.

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Editor's Notes

Last month's notes dwelt on the future of the physical part of the Garden. This month I would like to give our thoughts on future personnel.

For many years the Director of the Garden had the time (and lately had to find the time) to supervise the construction of buildings and improvements in the Garden. As our large operation has grown in memberships, buildings, library, and various activities, there is now the need for an Assistant Director (who will later move up to Director) to take care of improvement projects.

There has also been a real need for a Botanist on the Staff. Arrangements are being made with a fine botanist who will begin his association with the Garden this coming January.

Our Horticulturist, John Weber, is in need of an assistant and a gardener full time. Lynn Trainum and Don Shelstad work two days a week in the Visitors' Building and three days in the Garden on general maintenance work during the tourist season, then on construction projects during the hot summer months.

The work load is getting heavier in the office, and our secretary, Barbara Worbington, could use another person half-time, whose remaining time can be spent working with the Botanist in the Herbarium.

This summer we have three excellent college students, Lyle McGill, Dave Squires and Dennis Shelstad, who are handling the extensive watering of our plants and also doing construction work. We will possibly need additional students next summer as our program continues to expand.

Our volunteer librarian, Eleanor Radke, and her five helpers, have been accessioning our incoming books for over a year, using professional library procedures. Next they will accession the large Richter Collection, and then start subject-matter card reference files. Indications are that a possible grant will help us in this intensive cataloguing of books and subject matter.

The Safety Engineer of the insurance company that handles our liability and fire coverage inspected the Garden last fall and made five recommendations for the increased safety of our visitors. He came back in July to check if any of his recommendations had been carried out, and he was astounded that we had nearly all of his points taken care of or nearing completion this month. He explained his amazement by saying that "many organizations will not follow my safety suggestions since they cost the organization large sums of money". This is many times true, but one can be happier dealing with the public when it is known that the safety of visitors is a serious concern of the Garden, regardless of cost.

For your information, the costs to us for these safety recommendations were as follows:

1. Erect a thirty-inch-high wall in front of Visitors' Building, $359.37.
2. Paint one foot of each end of parking

(Continued on page 81)

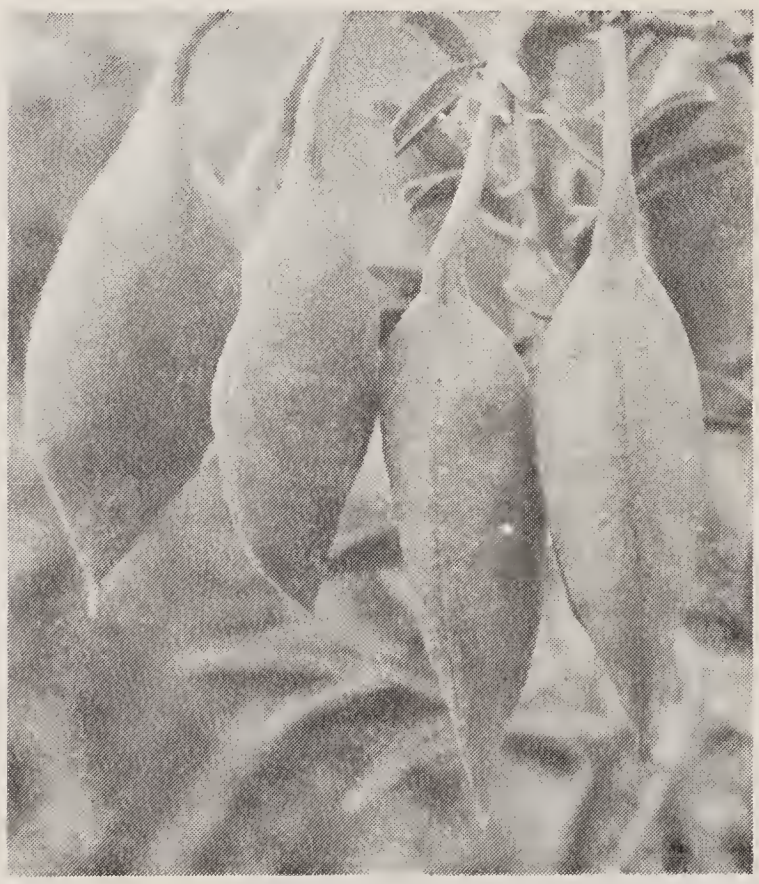
Desert Trees and Shrubs

BLADDER POD
Isomeris arborea

Capparidaceae
Caper Family

Isomeris arborea is a shrubby member of the caper family and like many other species in the family, it has strong-scented foliage and stems. It forms a divergently branched, open or dense, rounded shrub, 0.5 to 1.50 meters (1.6 to 5 feet). The branches and stems are quite brittle. Leaves are tri-foliate, entire, and nearly glabrous with a dark green or grayish-green color. Leaflets are oblong to elliptic, broadest at the middle and terminated with a short, sharp point. These leaflets are 1 to 2.5 cm. long and 4 to 7 mm. broad. The large yellow flowers may be present anytime during the year and they occur in axillary racemes up to 15 cm. long. There are four oblong petals each 10 to 14 mm. long, the lower two being divergent. Sepals are four in number, erect and persistent. There are six stamens up to 2 cm. in length that are long-exserted. Style is short and bears a capitate stigma. Fruit consists of an oblong, leathery capsule to 6 cm. long and 1.5 cm. broad. Depending on the variety, the several-seeded pod is either much inflated or scarcely so. The smooth, tawny colored seeds are from 5 to 9 mm. long and subglobose to obovoid in shape.

Bladder pod is found in both the Lower and Upper Sonoran Zones and ranges from near sea level to 3,000 ft. (915 meters) in elevation. Its range does not extend into Arizona, but is located in southern and western California, and in Baja California and Sonora, Mexico. It grows



Inflated pods of *Isomeris arborea* give Bladder Pod its common name.

Bright yellow flowers with long stamens appear all through the year.

Although the foliage has an unpleasant scent, *Isomeris arborea* is an attractive addition to almost any desert garden.

primarily along dry washes, but also on dry slopes and mesas in the desert, grassland, and chaparral belts.

Propagation of **Isomeris arborea** by seed is easy since no seed pretreatment is necessary. Seedling growth is rapid and a flowering sized shrub can be produced within several years. While very colorful in flower and for a prolonged period, it may be undesirable to many people as an ornamental due to its ill-scented foliage. It is very drought hardy and once established should not be watered excessively during the summer months. Only a very few desert gardens in southern Arizona have utilized this species in their landscape and it is not known to be in the local nursery trade. It is, however, an excellent plant for a desert home and requires little attention.

REFERENCES:
Benson & Darrow, Trees and Shrubs of the Southwestern Deserts

Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

—JHW

Arizona Wildflower

GROUND CHERRY
Physalis crassifolia
Solanaceae
Potato Family

There are eleven species of Ground Cherry in Arizona, all of them edible when ripe and all more or less tasty.

The genus Physalis is found chiefly in the Americas, but there are a few species native to Europe and Asia. The genus includes the decorative Japanese Lantern and the Cape Gooseberry (**P. peruviana**, neither from the Cape nor a gooseberry, by the way) which is called Poha in Hawaii and is made there into a jam that is as delicious as it is expensive here on the mainland.

Our own wild Physalis species ought to

make quite tasty preserves, and Euell Gibbons in "Stalking the Wild Asparagus" gives several recipes for Ground Cherry cooking.

This Desert Ground Cherry, **Physalis crassifolia**, is the most xerophytic species, and the only suffrutescent (woody-based) one in Arizona. It grows at elevations of 3000 ft. or lower, and we have most frequently seen it on black lava rocky slopes where there is almost no visible soil.

P. crassifolia is a perennial with long, white, radish-like roots. It grows in an open bushy shape to a height of one or two feet, much wider than it is high. The slightly-toothed thickish leaves are broadly ovate, light green, one-half to one-and-a-half inches long, and borne on slender petioles about the same length.

The flowers are a pale dull yellow, and campanulate or bell-shaped. After the flower is fertilized, the calyx becomes greatly enlarged and inflated into a ribbed papery "lantern" an inch or more long, which encloses the pulpy greenish berry. This "lantern" is green at first, turning straw-colored as it dries.

In Arizona **P. crassifolia** is found from the canyons of the Colorado River in the north to Pima and Yuma counties in the south. It blooms from February to October

and is relatively common. Distribution is from southern Utah and Arizona to southeast California and Baja California, Mexico.

REFERENCES:

Gibbons, Stalking the Wild Asparagus
Jaeger, Desert Wild Flowers
Kearny & Peebles, Arizona Flora
McDougall, Grand Canyon Wild Flowers

—L D

This species of Ground Cherry is often found on rocky slopes.

ASPECTS OF THE DESERT

The plateau that covers northeast Arizona ends abruptly at the Mogollon Rim, an escarpment with a drop averaging 1500 ft. to the land below. Here the view is into the Tonto Basin, which the Spanish called Apacheria, and avoided, preferring to follow less perilous routes to the north.

Mexican Cactus

ORGANO
Cephalocereus hoppenstedtii
Cactaceae

In the valley of Zapotitlan, about thirty miles southwest of Tehuacan in the state of Puebla, this tall columnar cactus attracts your attention because of its height, slenderness, gray-white color, and the way it curves its height into the southwest from which direction the prevailing winds come.

The plants are tall and grow so close together that a person can reach from one plant to another. They fill the whole valley and, with other cacti, make this one of the densest cactus "stands" in the world. The density is hard to conceive until you drive over a rise and look down into the valley. (The few Indians who inhabit the valley resent intruders in their area, so it is best not to linger.)

In collections there are many plants of **Cephalocereus hoppenstedtii** grown from seed or imported as small plants from Mexico. These must be grown indoors in a climate where there is frost. At the Garden we have had plants growing outside to a height of twenty-two feet, but unfortunately our soil is shallow and the plants eventually topple over and crack. When this happens we cut two or three two-foot-long sections of the columnar plant, root them, and plant them. As yet C. **hoppenstedtii** has not flowered for us.

This plant will grow up to thirty-five or forty feet, a single column ten to twelve inches in diameter, with no arms or offshoots. The stem is light green with about sixteen ribs covered with small areoles each bearing ten to fifteen rather blunt, soft, white radial spines; five to ten central spines that are thick, blunt and soft and about three to four inches long. The dense covering of these white spines gives the plant its gray-white appearance.

New spines at the apex of the plant are usually yellowish-white and ascending. As

Habitat of *C. hoppenstedtii* is the Zapotitlan valley, Puebla. Shorter cacti almost fill the space between the tall ones.

the plant attains blooming size it develops a pseudocephalium on the side, from which the three-inch white-to-yellow flowers protrude. Fruits are an inch in diameter, whitish with reddish pulp, and with pitted blackish seeds.

Backeberg in Cactaceae set up a new genus in 1960 honoring Scott Haselton, the former editor of the Cactus and Succulent Journal. He combined this plant with **Cephalocereus columna-trajani** to form **Haseltonia columna-trajani.**

Type locality: Zapotitlan, Mexico.

Distribution: Southern Mexico.

References:

Backeberg, Cactaceae
Borg, Cacti
Bravo, Las Cactaceas de Mexico
Britton & Rose, The Cactaceae

—WHE

At right: the "hair" on one side of the plant is the pseudocephalium. This is one of several Mexican cacti popularly called "organo".

EDITOR'S NOTES

(Continued from page 75)

lot bumper blocks with contrasting color, $73.20.

3. Paint yellow stripes on all steps and risers, $13.40.

4. Remove planks from three bridges and substitute solid surface, $1429.80.

5. Remove loose flagstone steps east of Administration Building, or possibly eliminate hazardous steps, (not yet completely finished, cost not yet computed.)

I hope these notes will give Members an idea of some of our Garden's "extra-curricular" activites that aren't visible to the average visitor.

NOTICE TO MEMBERS . . .

To our members:

With this issue you have also received our 1970-71 Activities Calendar. We'd like to call your attention to Janet Alsever's classes next spring. Her exhibit, here at the Garden, of cactus blossoms and desert wildflowers, preserved so that they look perfectly fresh, has become one of our most popular attractions. There is much interest in Mrs. Alsever's personally-developed method of drying flowers, but she feels that Garden members should be given first chance to register for the classes before registration is opened to the general public. For information about the classes, please contact the Garden immediately.

(An interview with Mrs. Alsever is planned for the next issue of the Bulletin.)

Arizona Cactus

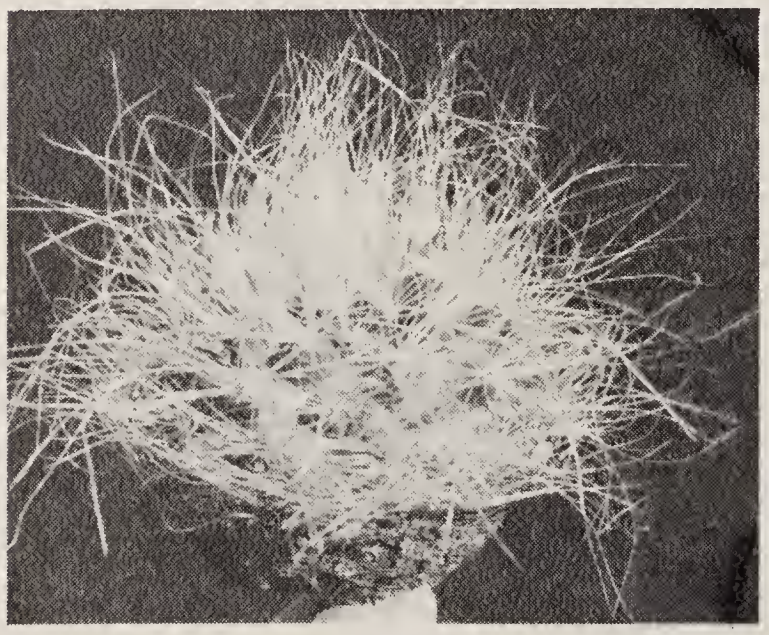
BRISTLY PLAINS CACTUS
Pediocactus paradinei

Cactaceae

In the spring of 1956, Mr. N. A. Paradine of Phoenix, Arizona, an enthusiastic cactus plant explorer of the Arizona desert, found a small hairy cactus in House Rock Valley of northern Arizona. He felt it was a new plant for Arizona and showed it to B. W. Benson, then at the Bryce Thompson Arboretum, who, with the help of Dr. Lyman Benson and Dr. Philip Munz, described it in Cactus and Succulent Journal, Sept.-Oct. 1957, Vol. XXIX, No. 5, as **Pediocactus paradinei.**

In the meantime, Mr. Paradine sent some of the plants to Curt Backeberg in Germany, who placed it in the genus **Pilocanthus** with some question.

On August 26, 1956, Gus and Sylvia Hermann, also good plant explorers, discovered this cactus in northwest Arizona and gave a specimen to Mr. W. T. Marshall (DBG Accession No. 5786). He wrote of the plant in Saguaroland Bulletin, Oct. 1956, Vol. X, No. 8, omitting a Latin description or name, apparently being generous enough to defer to B. W. Benson's description, which appeared in a subsequent issue of Cactus and Succulent Journal, as mentioned above. (I am sure that if he had chosen to make the Latin description himself the plant would now be carrying a name honoring the Hermanns. He had already described another Pediocactus found by the Hermanns as **Pediocactus hermanii.**)



The white spines are amazingly long for such a miniature cactus.

This simple small plant, two to three inches wide and one-and-a-half to two inches high is found under small bushes or in perennial bunch grass in limestone soil in isolated sections of the desolate House Rock Valley, east of the Kaibab Plateau, at about 6200 ft. elevation.

It is a striking plant, with its long (2"-2½") white, glossy, hair-like spines. It has four to six central and about twenty radial spines which all seem divergent, giving the appearance of a plant exploding. Flowers are quite large, up to an inch in diameter, nearly white, with pink midribs on the obovate petals. Fruit is dry, a half inch in length, tan, and when ripe develops a longitudinal dehiscence. Seeds are black, one-sixteenth inch long.

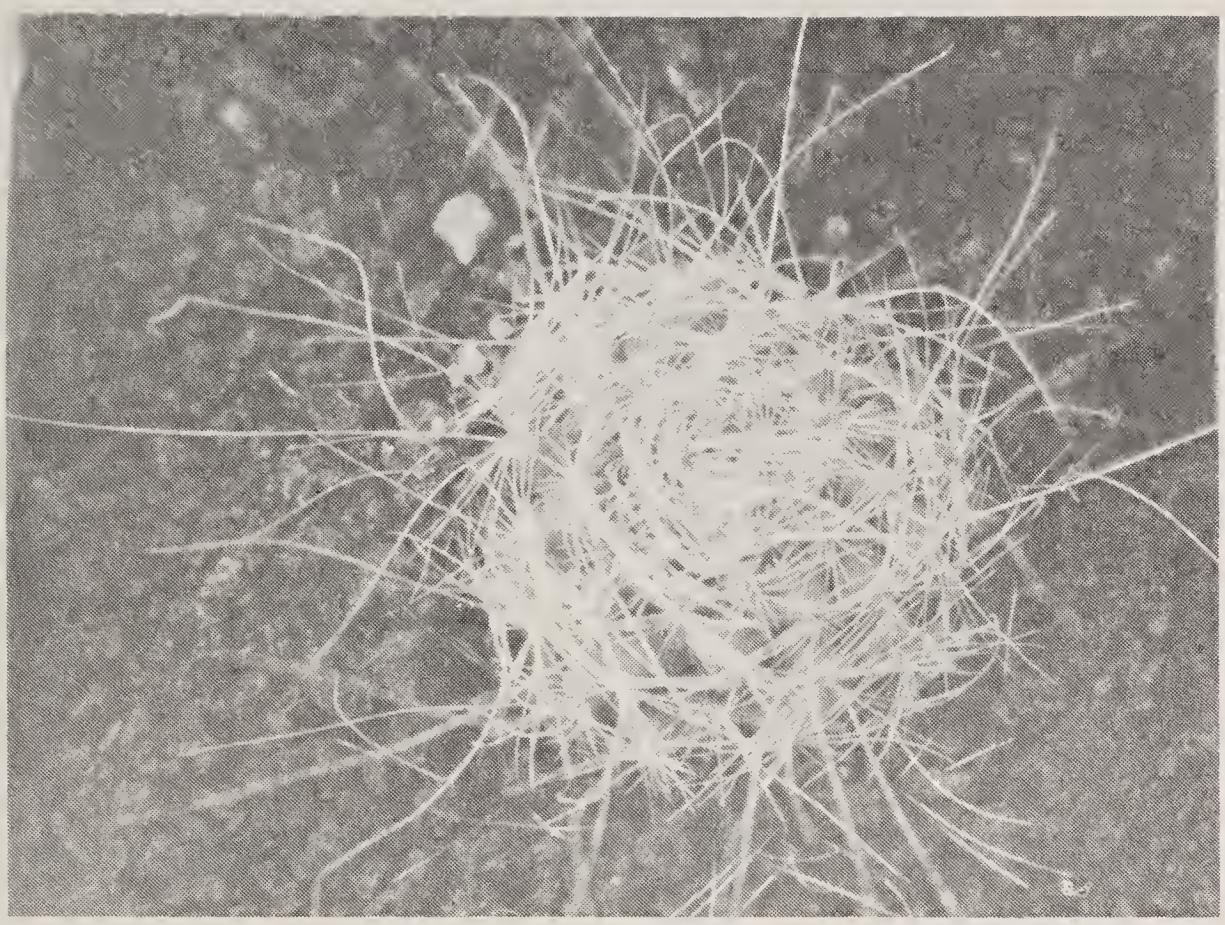
This, like all plants from higher elevations, is hard to grow in the low desert unless it is kept in the shade or on the north side of a building. It is indeed a rare plant and should be treated as such. Distribution: Gravelly and limestone soils in valleys and also in fans off cliffs, under sagebrush and in grasses of the Navajoan desert.

Type locality: House Rock Valley, Coconino County, Arizona.

References:

Benson, L., The Cacti of Arizona
Backeberg, Die Cactaceae
Cactus and Succulent Journal
Saguaroland Bulletin

—WHE



This *P. paradinei* would have looked smaller than a dime if the photo had included the full length of all the long spines.

MIEG COLLECTION TO NEW MEXICO'S DESERT PARK

The New Mexico State Parks and Recreation Department, under the active direction of James Dillard, is opening a major park in Carlsbad, N. M. The Project, costing in excess of three million dollars, and covering over 1000 acres, falls into two sections, one devoted to native animals shown under conditions as close as possible to their natural way of living, and the other given over to plants of the desert.

Since many of the latter cannot live under conditions as found in Carlsbad, where temperatures often drop to zero Fahrenheit and lower even though this part of the state is low desert, a large building is being constructed for housing vegetation of warmer climates. This building, which, we understand, will cost around one million dollars, will be completed by next January.

The Desert Botanical Garden is assisting, through its staff, in the general planning of this, so as to give to the public as attractive as possible a presentation of local and foreign desert vegetation.

The State of New Mexico has acquired the collection of cacti and other desert plants which were assembled by Mr. and Mrs. Charles Mieg of Paradise Valley, Arizona. Many of these plants were collected during the Miegs' numerous trips to Mexico, while others have been grown by Mr. Mieg from seed and cuttings. Mieg, who spent more than thirty years assembling this collection was most interested in its being kept together, and the sale to New Mexico presented an opportunity to keep the whole collection as a unit, with proper care assured. The Mieg collection will occupy the main building at Carlsbad.

According to Mr. Mieg, the "infirmities of old age" have curtailed his collecting,

and the few plants which he still raises from seed are "more a minor sort of amusement than a means of increasing my plant supply". All seedlings, though, are part of the deal with New Mexico, and the Miegs have assured the N. M. Parks Dept. that they will continue to assist in giving the plants the proper care required for good growth.

Says Mieg, "Frankly, the house on Mummy Mountain will not be the same from now on, and at times this makes me feel as if I had sold my children. But from the plants' point of view, the arrangement is just what I had hoped to find someday."

Many of the rarer plants which the Miegs collected in Mexico over the years were given to the Desert Botanical Garden as soon as the plant collectors returned home. The Miegs interest in the addition of rare plants to the Garden is still strong.

Just a part of the Miegs' extensive cactus collection. The landscaping, the variety of plants and the hillside site have made it one of the outstanding private cactus gardens.

GARDEN ACTIVITIES

		SEPTEMBER	
Tues.	**8th**	PHOENIX BONSAI SOCIETY Organizational Meeting	**7:30 P.M.**
Tues.	**22nd**	BONSAI SOCIETY Workshop—Soil Types	**7:30 P.M.**
		OCTOBER	
Tues.	**6th**	CACTOMANIACS—Potluck supper	**6:30 P.M.**
Sat.	**10th**	NATURE TRIP—San Francisco Peaks (154 miles)	**8:30 A.M.**
Tues.	**13th**	BONSAI SOCIETY—Desert Plants for Bonsai Use	**7:30 P.M.**
Tues.	**20th**	CACTOMANIACS—Dr. George Rauh, Heidelberg	**8:00 P.M.**
Tues.	**27th**	BONSAI SOCIETY Workshop—Preparing Trees	**7:30 P.M.**

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXIV October, 1970 No. 8

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P. O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXIV | October, 1970 | No. 8

Arizona Cactus and Native Flora Society

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Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

Any Garden that hopes to grow and to justify its existence by making contributions to botanical knowledge must plan to add competent botanists, taxonomists and researchers to its staff. The Desert Botanical Garden has realized for some time that our future lies in this direction, and is striving to put these plans into action.

As mentioned previously, a world-recognized botanist will join our staff next year. He will work on agaves and other related desert plants.

The Board has approved plans for a large Herbarium to be built next year south of our Richter Memorial Library. The new herbarium, in which our botanist will have his office, is urgently needed. Our present herbarium is located in a smallish room in Webster Auditorium, and it's packed so full it may burst the walls at any time now.

The operation of the Garden is becoming too large for one director to operate by himself. Very soon, we will need an assistant director, and then an educational director for classes, tours, nature hikes, etc.

A superintendant is needed to expedite all the outdoors activities, remodelling and construction. It is too large a job for our horticulturist to handle along with his important propagation work. Additional gardeners are needed the year round. College students have helped us during the summer months (we have had Arizona State University students from seven different countries), but as we expand, more help is needed to keep the Garden clean and appealing to the visitors and the students of desert plants who come to the Garden.

Our summer students help the staff in construction work needed for Garden improvement. Possibly we should contract out many of our improvement jobs, but at present our projects are being completed in a manner we approve of, and at quite a lower cost.

Any organization operating on private funds, must have a large and dependable income in order to put its plans into effect. Our progress here has been steady: twenty years ago income was $16,000, with two employees; today income is $102,000, with eight employees. The Garden has increased in size, but so have operating expenses. Still, there has been satisfying progress, and support from the Garden's friends, who realize (though the general public doesn't) that we're not on the receiving end of streams of cash from the city, county and state.

After an unusually dry summer, the rains fell on Labor Day weekend so heavily that the storm's total rainfall was close to five inches, which brought us well above a year's average total. As a result, the desert has been flowering generously for the past weeks. Here are a few of the "bonus" wildflowers — all of them usually spring and early summer flowers that you don't expect to find in the autumn. Desert marigolds, golden crown-beard, rabbit bush, Geraea or desert sunflower, fetid-marigold, and Kallstroemia or Arizona poppy. Autumn in the desert is always pleasant, but this year it's better than average.

Mexican Cactus

BISNAGA
Echinocactus grandis
Cactaceae

Through the Mexican states of Puebla, Hidalgo and San Luis Potosi, you will encounter barrel cacti that overwhelm your imagination. We have large barrels in New Mexico and Arizona up to six feet tall and two feet in diameter, but Echinocactus grandis, E. visnaga, and E. ingens are up to ten feet tall and three and a half feet wide.

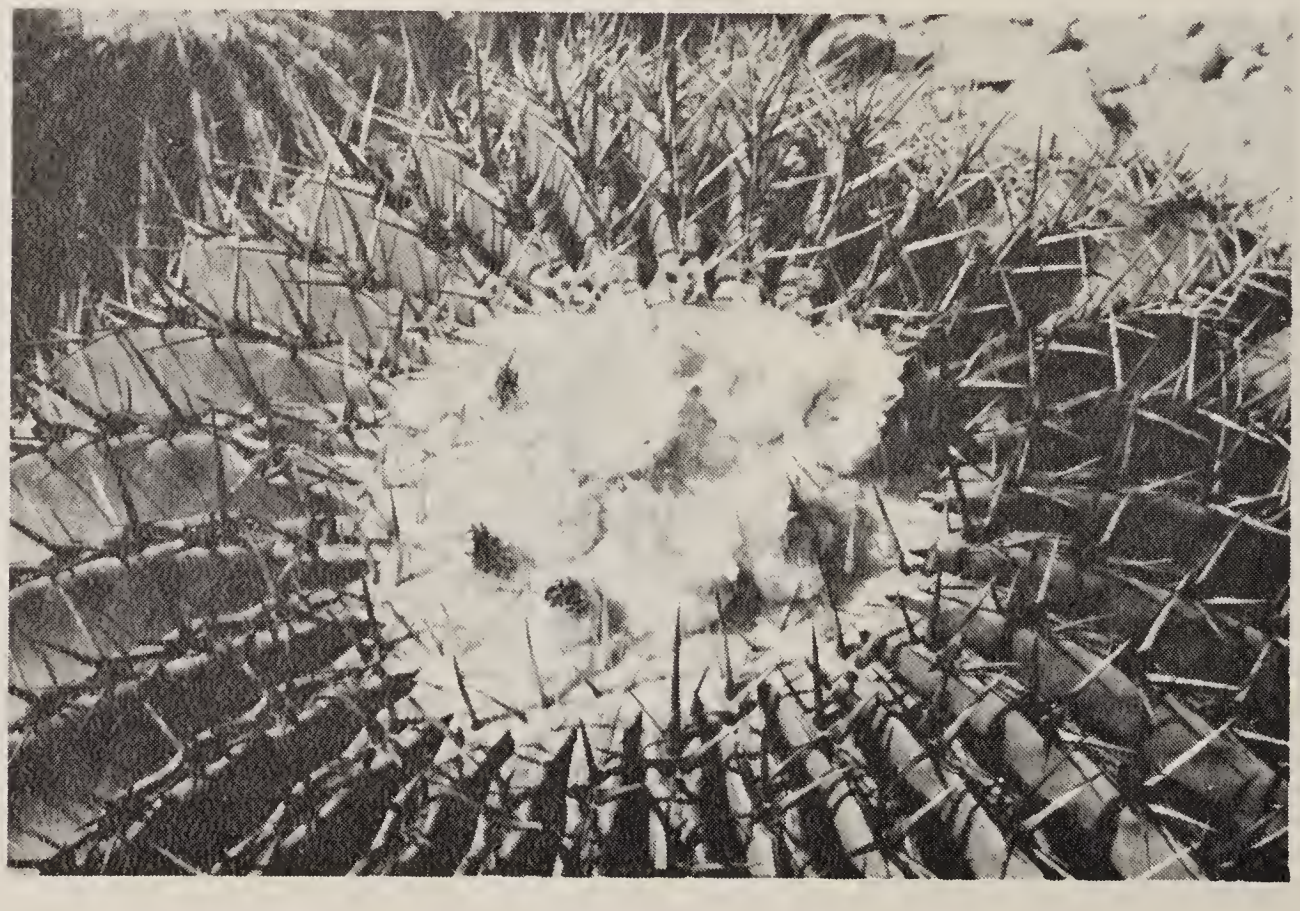
E. grandis is a prominent plant on the sides of rocky, well-drained hills near Tehuacan in the state of Puebla. As the plants gain height, their weight will cause them to sag, forming "spare tires" around the girth, causing indentations along the tall silhouette that look rather amusing.

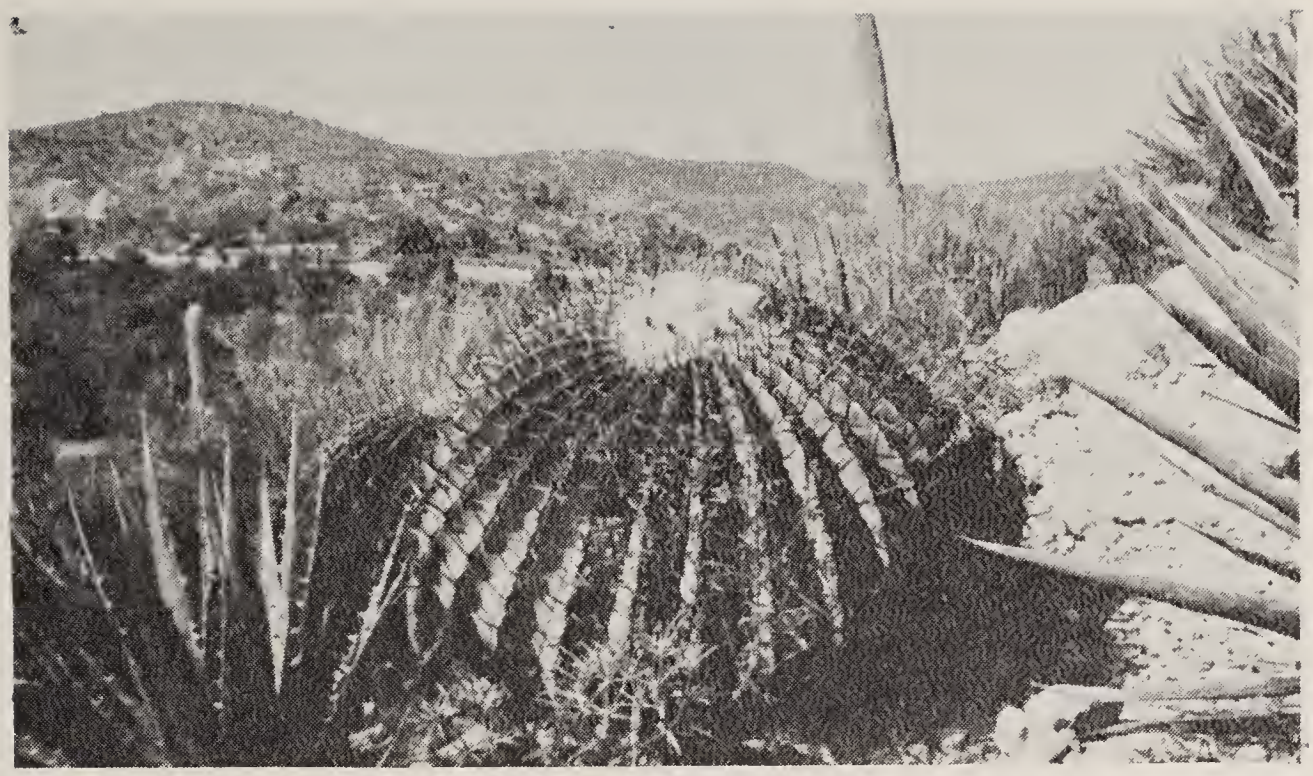
E. grandis is a simple cylindrical plant, rather dull green in color, having a sharp central spine 2½ to 3 inches long, and five or six radial spines 1½ to 2 inches long, all emerging from areoles along the edges of the barrel's ribs. A characteristic of the juvenile plant is its dark splotches or bands of purple that encircle the plant until it is about fifteen years old. Then the purple is absorbed by the plant.

As in all Echinocactus, the apex is covered with a dense wool that protects new apical growth, and out of which emerge the beautiful yellow flowers 2 to 2½ inches long and wide. Flowers appear from June until November. The fruit is three to four inches long, partially hidden in the dense wool. The fruit is covered with many scales and with inch-long wool. The tensile strength of this wool is very low. The natives of the area pluck it out of the plant and use it to fill pillows. Each large fruit contains a very few brown to black seeds.

E. grandis germinates quite easily and grows readily in hot, moist conditions, where it has good drainage. In its youth the plant is very tuberculate, with elongated nipples capped with clusters of large, colorful spines.

Rose described this plant in 1906 in





Contr. U. S. Nat. Herb. 10:126. Britton & Rose held it as a species in Cactaceae 1921. It has been retained as such by Backeberg, Marshall and Bravo. Recent work done by cacti authorities in Mexico sets it as a subspecies of E. ingens because of flower color, position of flower, arrangement of spines and general appearance.

In the dry areas of Mexico where this plant thrives, it is frequently chopped up for cattle feed and for making candy. If you grow cactus at home, the sight, during your travels, may leave you aghast.

TYPE LOCALITY: Tehuacan, Puebla, Mexico.

DISTRIBUTION: Limestone hills of Puebla.

REFERENCES

Bravo, Las Cactaceas de Mexico
Britton & Rose, The Cactaceae

—WHE

Desert Trees and Shrubs

COURSETIA
Coursetia glandulosa

Leguminosae
Pea Family

Coursetia glandulosa forms an open, sparsely branched, unarmed shrub 2 to 6 meters (6.6 to 20 ft.) high. The stipulate leaves are pinnate and the rachis extends beyond the last pair. There are usually five pairs of elliptic-oblong leaflets, 5 to 15 mm. long and 2 to 3 mm. broad. These are short-pointed at the apex. Flowering commences in April and continues through May. The inflorescence is glandular and the raceme is short, bearing only from three to six flowers. Corolla is 10 to 12 mm. long, the banner petal is mostly red while the wing and keel petals are white or yellow tinged with red. There are nine united stamens and one free stamen. Fruit is a glandular-pubescent, brown pod that is constricted between the seeds. The medium-to-thick-walled pod measures 4 to 7 cm. long and to 5 mm. broad. There are from 2 to 12 compressed brown seeds, about 4 to 5 mm. in diameter.

Coursetia glandulosa has a very disjunct distribution extending from southern Arizona into Sonora, Baja California, and other states of Mexico. In Arizona it is found in Maricopa, Pima, and Yuma counties ranging from the Kofa Mountains

in the west as far east as the Superstition Mountains and south into Mexico. With an altitudinal distribution between 600 to 1200 meters (approx. 2,000 to 4,000 ft.), this species is locally abundant in rocky canyons and on dry alluvial hillsides, but is absent on the low intermountain plains. In April and May it is especially noticeable in flower along the Apache Trail near Canyon Lake and at Fish Creek Hill.

Propagation by seed requires pretreatment to overcome seed coat dormancy. The pods split and release the seed early, necessitating collection soon after ripening. Hard and semi-hard cuttings strike roots easily and, when seed is not available, propagation can be achieved by this means. Rate of growth of this plant under cultivation at the Desert Botanical Garden has proved to be quite slow.

Cultural requirements are a coarse well-drained soil and a full sun exposure. This species is a very drought-hardy one and supplemental watering after establishment is unnecessary.

Coursetia glandulosa while being a very open, sparsely branched and sparsely leaved shrub, still merits consideration as an ornamental plant for the desert garden. The profusion of pea-like flowers in early spring and summer are of color shades not common to most other low desert shrubs or trees.

REFERENCES:

Benson & Darrow, Trees and Shrubs of the Southwestern Deserts.

Kearney & Peebles, Arizona Flora.

Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.

—JHW

ASPECTS OF THE DESERT

Telegraph Pass, 15 miles east of Yuma, Arizona, was the sole route east from the Colorado River port in early days. In this apparently barren pass are found smoke trees, palo verdes and four-foot-high **Bursera microphylla**, commonly called elephant tree.

Arizona Wildflower

DESERT MARIPOSA
Calochortus kennedyi
Liliaceae
Lily Family

This is the most beautiful desert wildflower.

It is hard to think of a rival if you have seen the Desert Mariposa glowing flame-orange against black malpais rocks, or hovering on nearly invisible stems above bone-dry, bone-colored andesite outcrops.

Even the botanists who compile the floras we consult in writing these short articles get lyrical about the Desert Mariposa after, of course, describing the usual things like perianths and subumbellate inflorescences.

Desert Mariposa Lilies usually grow singly, not in crowds like desert poppies, but they may occur in large colonies in favorable seasons and localities, and then they make a gorgeous display of color, seen from considerable distances as patches of bright flame on the desert floor.

The genus is **Calochortus**, which translates as "beautiful grass", referring to the fine grasslike leaves as well as the flower. The common name, Mariposa, is the Spanish word for butterfly, an appropriate choice for this delicate beauty.

Of all the Lily Family, **Calochortus kennedyi** is the most xerophytic. From the small tunicate bulb only a few narrow gray-green leaves and a single slender stem grow to a height ranging from a few inches to a foot. But, if these parts of the plant are unobtrusive, the solitary flower is large and showy. The three petals form a cup that is two inches across. The color of the petals is hard to describe. It has been called a deep rich orange, clear vermilion, flame, nearly scarlet. One author calls it an exceedingly brilliant, unusual color, not quite like anything else in nature. (Occasionally one finds a few Desert Mariposas that are clear yellow.)

At the base of each glowing petal is a large brown-purple spot, a gland covered with noticeable hairs. The petals are thick in texture and easily bruised. Anthers are a purplish color.

C. kennedyi grows in coarse soil or rocky ground on slight slopes, at elevations of 5000 ft. or, usually, lower. Flowering is from March to May. Distribution is from Nevada in the north to Sonora, Mexico in the south. In Arizona it is found from Yavapai and Mohave Counties south to Cochise, Pima, Santa Cruz and Yuma.

Bulbs of this and other species of **Calochortus** have been eaten by the Hopis and Navajos, either raw or boiled or baked. The early pioneers also gathered the bulbs for food, especially in emergencies. We do not recommend your doing the same. To destroy a lovely plant for the sake of half a mouthful of starchy food is stupid.

REFERENCES

Armstrong, Field Book of Western Wild Flowers
Harrington, Edible Native Plants of the Rocky Mountains
Jaeger, Desert Wild Flowers
Kearny & Peebles, Arizona Flora

—LD

Arizona Cactus

CREAM CACTUS
Mammillaria heyderi var. macdougalii
Cactaceae

Mammillaria heyderi was described by Muhlenpfordt in 1848. Rose described **M. macdougalii** in 1916 in Stand. Cycl. Hort. Bailey. Benson, in 1940, considered **macdougalii** a variety of **heyderi** in that edition of Cacti of Arizona. Now he has it as a variety of **M. gummifera** (1969), which was described by Engelmann in Wislizenius Mem. Tour North Mexico, 1848. **M. gummifera** is found through northern Mexico, the type locality being Cosihuiriachi, Chihuahua.

M. heyderi var macdougalii is one of the largest of the mammillarias, growing up to twelve inches in diameter and up to six inches in height above ground, and having an underground carrot-shaped root eight inches long or more. The plant is characterized by having milky juice in its body. When bruised it will emit this juice, which is not irritating to human skin.

R. C. Proctor photo.

This plant normally has a flattened, slightly depressed top, but will grow tall with a rounded top if grown in an area with too much shade. It is encircled with a lovely wreath of creamy flowers about 1½ inches in diameter, blooming in late June and early July. Flowers are followed by club-shaped red edible fruit about one inch in diameter and containing rugose brown seeds.

These are easy plants to handle, as the central spines (1 or 2) are slightly curved, and the radials (1 to 12) are straight or slightly recurved and descending. The plants are usually found growing under bushes for protection from the sun and from animals. Sometimes a plant has only its flattened and strongly-angled tubercles emerging from the ground, so it may be quite difficult to see unless it is in flower, or its red fruit betrays its presence. When the plant is quite turgid and has risen out of the ground it is easy to locate.

The "flat" pincushion cacti are slow growers. One four inches in diameter can easily be sixteen to twenty years old, so growing them from seed is a lifetime of waiting, though they will bloom when two inches in diameter, at an age of about ten years.

TYPE LOCALITY: Near Tucson, Arizona.

DISTRIBUTION: Southeast Arizona, on hillsides, valleys and in desert grassland at 3500-5000 ft. elevation, down into Sonora, Mexico. Found in Pima, Santa Cruz and Cochise counties.

REFERENCES

Benson, The Cacti of Arizona
Britton & Rose, The Cactaceae
Earle, Cacti of the Southwest

—WHE

YEAR-ROUND SPRINGTIME

The desert blooms in the spring, but the Garden's greatest number of visitors come in the winter months. Until now, they haven't been able to enjoy the bright blossoms of cactus and the varied colors and shapes of desert wildflowers.

But now spring is in the Garden all year

long, and our visitors can see flowers that look as if they had been picked fresh this morning. There are some two hundred in the new "permanent springtime" exhibit prepared by Janet Alsever. The petals are silky, the anthers in the heart of the flowers are pollen-laden, even the most fragile filaments of acacia and fairy-duster keep their perfect shape.

The flowers are real. They're dried flowers. And the secret is Mrs. Alsever's use of an uncommon method of drying them. You may have seen dried flowers before, but never as lifelike as the ones skillfully preserved by Mrs. Alsever.

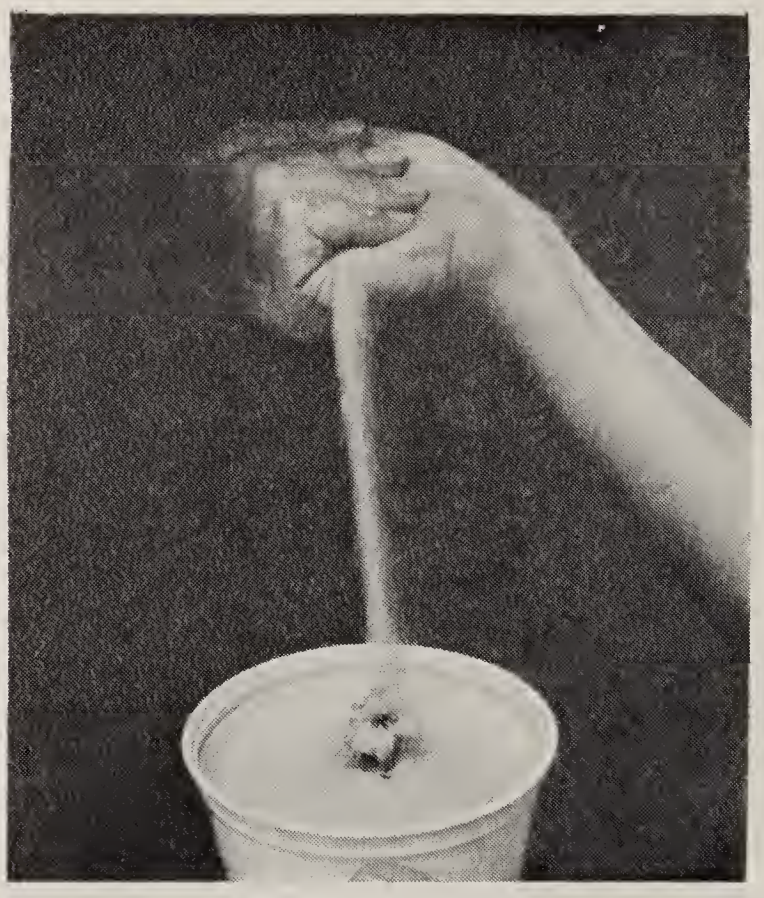
Recently we watched Mrs. Alsever at work and interviewed her as she was preparing some late-summer blossoms for display.

Janet Alsever is a slender dark-haired woman who works with delicate precision and talks with enthusiasm about her work.

Sand-drying is a very old technique, she said. There has always been an interest in preserving flowers three-dimensionally, and people have experimented with sharp sand, borax, cornmeal, sawdust, and silica gel, but all these materials have drawbacks.

"I myself tried cornmeal and borax, and some of the others alone or in combinations, but they were infuriating — completely unsatisfactory. Finally, I learned about Geneal Condon's work."

In the 1950s, Geneal Condon, who had



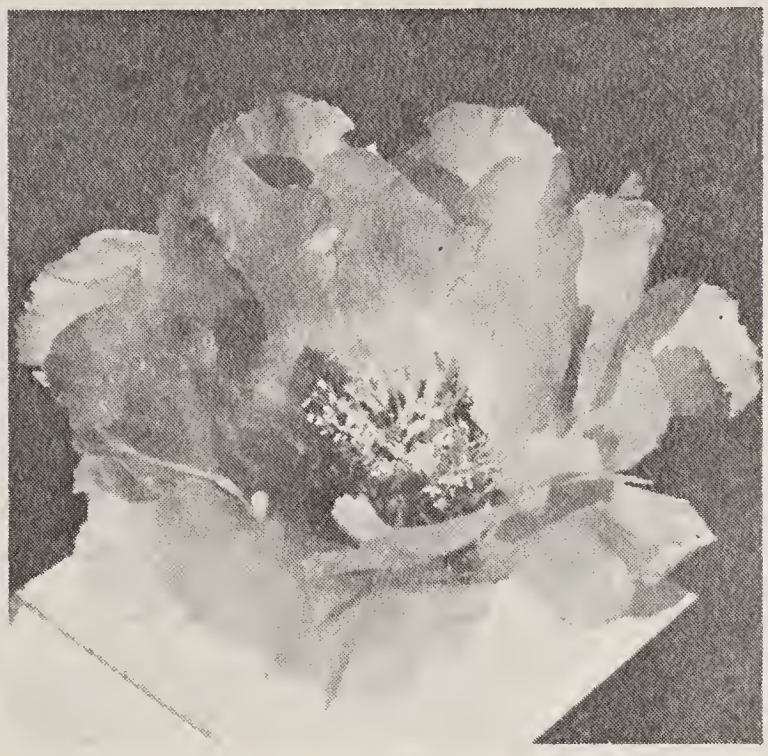
collected flowers in many parts of the world, and was dissatisfied with pressed specimens, investigated sand-drying. She worked with many different types of sand, but it wasn't until she moved to Utah in 1953 that she experimented with oolitic

sand from Salt Lake, and found that it had the ideal qualities needed for sand-drying of delicate flowers.

Oolitic sand is strange stuff. Brine shrimp, about the only life form that can live in the highly salty lake, are tiny, transparent creatures. Their eggs, and other lake deposits, are coated with lime carbonate and become highly absorbent, spherical granules. Mrs. Condon found that the weight and size of the grains of oolitic sand were remarkably consistent, and that the tiny spheres rolled gently into place, distributing themselves evenly and not distorting delicate flower parts.

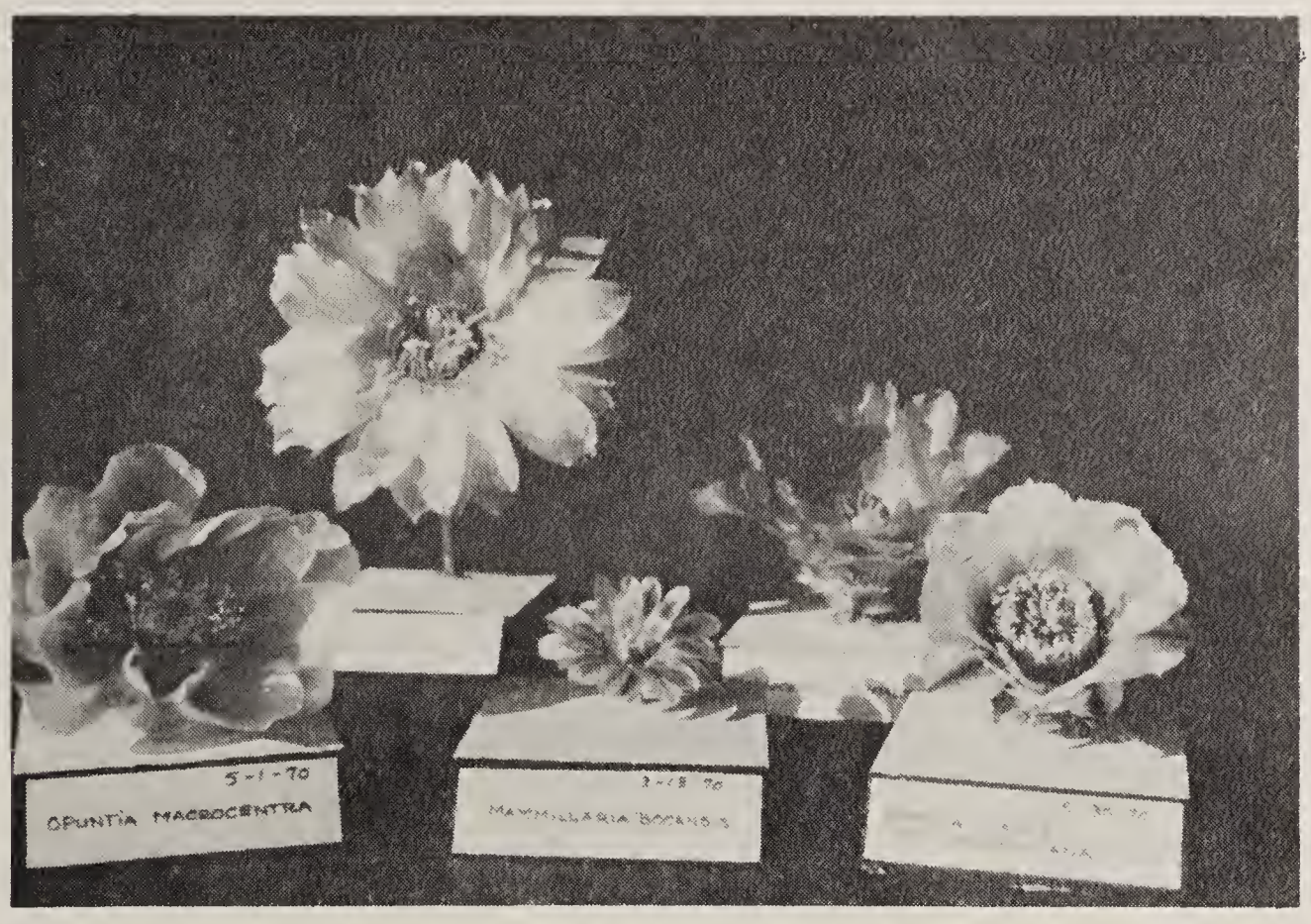
"It does such a good job that one bouquet Mrs. Condon made fifteen years ago is still in perfect shape. And if you've been to Williamsburg or Monticello you may have seen formal bouquets that were made eight years ago. But we don't know enough about the lasting qualities of desert wildflowers and cactus, and that's what I've been experimenting with, though I work with garden flowers, too."

We looked on while Mrs. Alsever prepared flowers she had just picked in the Garden. For each flower she uses an individual container, a little wider and taller than the flower. This day all the flowers were about the same size, so she placed bottomless cardboard cylinders upright in a flat box holding some of the oolitic sand.



A flower was set upright in its cylinder, and she then began to build up the level of the sand slowly and evenly, sifting the grains through her fingers.

"You have to do it evenly," she said, "or the petals will be bent out of shape by the weight of the sand. The only tools I use are tweezers to hold the stem at first and an



orange stick if a petal gets folded. But even that shouldn't be necessary if the sand is dribbled in a few grains at a time."

When a plant is completely covered with sand it is labeled and dated and put away to dry.

"This is when you need patience and experience. I still have to force myself not to peek."

Once the flower is dry, the sand is gently tipped out of the container. You'd expect most flowers to fall apart when dry, but they don't always do that. Some of the daintiest are surprisingly tough, but daisy petals, to give just one example, often fall off and must be glued back on, petal by petal.

"I've had to teach myself by trying — and failing! — for the last two years. But now I've learned quite a bit about drying time, about the colors that will hold or fade, all sorts of tricks. (Call them techniques, if you want to sound more dignified.) I love the challenge, and I learn more about flowers every time I work with them."

In the few months that Mrs. Alsever's flowers have been on display here at the Garden, we have been flooded with requests about her method of flower-drying. As a result, we have persuaded her to give a series of classes here at the Garden next spring. Mrs. Alsever feels that Garden members should be given an opportunity to register for these classes before registration is open to the general public. Since there has been such great interest in the classes, you would be wise to make plans now. For information about fees and materials, please telephone the Garden at 947-2800 soon.

GARDEN ACTIVITIES

		OCTOBER	
Tues.	6th	CACTOMANIACS—Potluck supper	6:30 P.M.
Sat.	10th	NATURE TRIP—San Francisco Peaks (154 miles)	8:30 A.M.
Tues.	13th	BONSAI SOCIETY—Desert Plants for Bonsai Use	7:30 P.M.
Tues.	20th	CACTOMANIACS—Dr. George Rauh, Heidelberg	8:00 P.M.
Tues.	27th	BONSAI SOCIETY Workshop—Preparing Trees	7:30 P.M.
		NOVEMBER	
Tues.	3rd	CACTOMANIACS Meeting — Pilgrimage to Paradise, Doty O'Rourke	8:00 P.M.
Wed.	4th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs	5th	LECTURE—Arizona Cacti	3:00 P.M.
Sat.	7th	NATURE TRIP—Lake Pleasant (45 miles)	8:30 A.M.
Tues.	10th	BONSAI SOCIETY—Displaying Trees effectively	7:30 P.M.
Wed.	11th	CLASSES—Succulent Plants	3 & 8 P.M.
Thurs.	12th	LECTURE—Arizona Wildflowers	3:00 P.M.
Wed.	18th	CLASSES—Culture of Succulent Plants	3 & 8 P.M.
Thurs.	19th	LECTURE—Arizona Trees	3:00 P.M.
Sat.-Sun.	21-22nd	BONSAI SOCIETY FALL SHOW	9-5 P.M.
Tues.	24th	BONSAI SOCIETY Workshop—Members' Trees	7:30 P.M.
Wed.	25th	CLASSES—Desert Trees & Shrubs	3 & 8 P.M.
Thurs.	26th	LECTURE—Arizona Birds	3:00 P.M.

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

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Editor's Notes

NOVEMBER is always the beginning of another season of activities — new faces, new members, "showing off" our summer construction projects, new plants, and freshened beds of well-growing cacti.

If you will refer to your 1970-71 Program of Activities, mailed to you with the September Bulletin, you will note that the first of our six-week classes on Better Understanding of Desert Plants began on Wednesday, November 4th with sessions at 3 P.M. and 8 P.M. These classes will cover: Deserts and their Plants, Succulent Plants, Propagation of Succulent Plants, Desert Shrubs and Trees, Propagation of Shrubs and Trees, Use of Desert Plants in Landscaping. Classes conclude with an all-day field trip, the trips for the first classes being to Seven Springs, Arizona.

Registration this fall is five dollars per person, and it includes the cost of pamphlets and plants used in the course. Approximately the same lectures and demonstrations will be given for the winter classes starting January 6th and the spring classes starting March 10th. Since the Garden, under our late director W. Taylor Marshall, started offering these classes in 1949, over 2300 people have enrolled.

IMPROVEMENTS were many this summer, and pictures of some are shown on page 107. Most of the construction has been completed, but work on a few of the projects will continue through the fall.

OUR BOOK LIST from the Bookstore is enclosed with this issue. You will notice that there are many new books of interest to yourself and your cactus-loving friends. This is a good time of year to remind you that our store also sells hand-woven place mats and potholders; jellies made from prickly pear, dates, wild orange, and pomegranates; boxed minerals; hundreds of desert postcards; Christmas cards; boxes of exclusive notepaper; and attractive jewelry. All the items in our Bookstore are Arizona-made. The Garden is a delightful place to do your Christmas shopping, and of course you know that your purchases directly aid the Garden.

CHRISTMAS CARDS are already being ordered by many of our members from the Western Traditions catalogue at the Bookstore. You can have them printed with your name if you want to, and we assure you that delivery is dependable and prompt. Stop in and look.

GRADE SCHOOL, high school and college classes are now visiting the Garden daily, so many of them that these groups must first contact the Garden's office for reservations, so that the classes don't overlap, or crowd each other during their tours, or interfere with the enjoyment of individual visitors to the Garden.

"Edible and Poisonous Plants of the Desert" is the title of a new Garden Science Bulletin, Number Six, to be published next year for the use of Boy and Girl Scouts, other groups, and individuals interested in these desert plants.

Desert Trees and Shrubs

SNAKE-BUSH
Colubrina californica

Rhamnaceae
Buckthorn Family

Colubrina californica is one of a number of relict species found in Arizona. It is a thicket-forming large shrub or occasionally a small tree that in growth form and general appearance is quite similar to **Celtis pallida**. The many stiff branches are divergent and form a dense mass up to 3 meters (10 ft.) high. Bark is gray and dull. Leaves are thick, dull green, and alternate in position, with short petioles. The margin is entire and the leaf surfaces are densely covered with fine hairs. Elliptic to obovate in shape, they range from 8 to 20 mm. in length and 6 to 12 mm. in breadth. Flowering extends from May to August. The numerous axillary flowers are inconspicuous due to their small size, 5 to 6 mm. wide. Petals, calyx lobes, and stamens all number five and are borne on a disc attached to the ovary. The yellowish, 1 mm. long petals are hood-shaped with short claws. There are three partly-joined styles that are persistent in the fruit. This fruit is a dry, three-chambered, spheroidal capsule, 7 to 9 mm. in diameter. It is glabrous and at maturity is brown or black. The hard walls of the capsule are grooved and there is one seed in each of the three chambers. The seed is about 7 mm. long, brown, smooth, and shiny. It has three surfaces, the back one is curved and the other two are flat and angled.

Colubrina californica has a narrow elevational range from 600 to 900 meters (2,000 to 3,000 ft.) in the Lower Sonoran Zone. It has a very discontinuous range, being found in only a few widely separated locations, of limited area, in southeastern

California, southern Arizona, and Baja California, Mexico. In Arizona there are isolated pockets of the plant occurring in Pima, Pinal, Maricopa, and Yuma counties. It is recorded from the Kofa, Castle Dome, Little Horn, Ajo, and Santan mountains and along the Apache Trail. Snake-bush grows in canyons and gullies, on dry hillsides, and along shallow sand washes of the outwash plains.

Colubrina californica can easily be propagated by seed with no pretreatment being necessary. It is, however, difficult to collect seed that is filled and not insect-infested, and ripening occurs during the period of highest summer temperatures. As with many other desert plants, the leaves of seedlings and juvenile plants are quite different from those of mature plants. Seedlings of Snake-bush have larger leaves with serrate margins in contrast to those of mature plants. This species is very drought-enduring and becomes deciduous after a prolonged dry spell. As a plant in a desert landscape, Colubrina would primarily be of value for screening purposes or for erosion control along minor watercourses. It thrives on dry sites in full sun and when in leaf makes a very attractive shrub.

REFERENCES

Benson and Darrow, The Trees and Shrubs of the Southwestern Deserts
Kearney and Peebles, Arizona Flora
Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert

—JHW

The four pictures, from left to right: 1, shrubby growth of Snake-bush. 2, close-up of foliage. 3, a flowering branch. 4, the spheroidal fruit.

Arizona Wildflower

BLUE FLAX
Linum lewisii

Linaceae
Flax Family

This sky-blue wild flax closely resembles the cultivated flax, source of linen, flaxseed and linseed oil.

Linum lewisii is a perennial, found in Arizona at elevations from 3500 ft. to 9500 ft. It is common on open mesas and in coniferous forests. It is a conspicuous plant at the Grand Canyon, especially along the roadsides leading to the North Rim of the Canyon.

The flowers are an inch across, and although usually blue, can be so faint a blue as to be nearly white. Flowers are

Blue Flax has an open growth habit. The leaves are fine and quite short.

The five-petaled Flax flower is blue to whitish, with faint blue veins.

perfect and regular, having five sepals, five petals, five stamens and a pistil with five styles. They open in the early morning and fall apart before night. Their readiness to drop petals makes them one of the most frustrating wildflowers to press and dry, since it is almost impossible to pick a flower for pressing without its coming apart in your hands.

Blue Flax grows to a height of eighteen to twenty-four inches, with slender herbaceous stems and numerous simple, linear, blue-green leaves less than an inch long.

Even in its very pale form it is most attractive, since the petals are delicately veined with blue.

In Arizona Blue Flax is in bloom from March through September. The distribution of the species in North America ranges from Saskatchewan and Alberta south to northern Mexico.

REFERENCES

Kearney & Peebles, Arizona Flora
McDougall, Grand Canyon Wild Flowers
Patraw, Flowers of the Southwest Mesas

—LD

ASPECTS OF THE DESERT

As Oak Creek drops from the Mogollon Rim to the Verde Valley, it cuts through these red Coconino sandstone cliffs and buttes. The Chapel of the Holy Cross near Sedona is dramatic on its rocky knoll, and affords breath-taking views of the surrounding "Red Rock Country" in the high desert.

Arizona Cactus

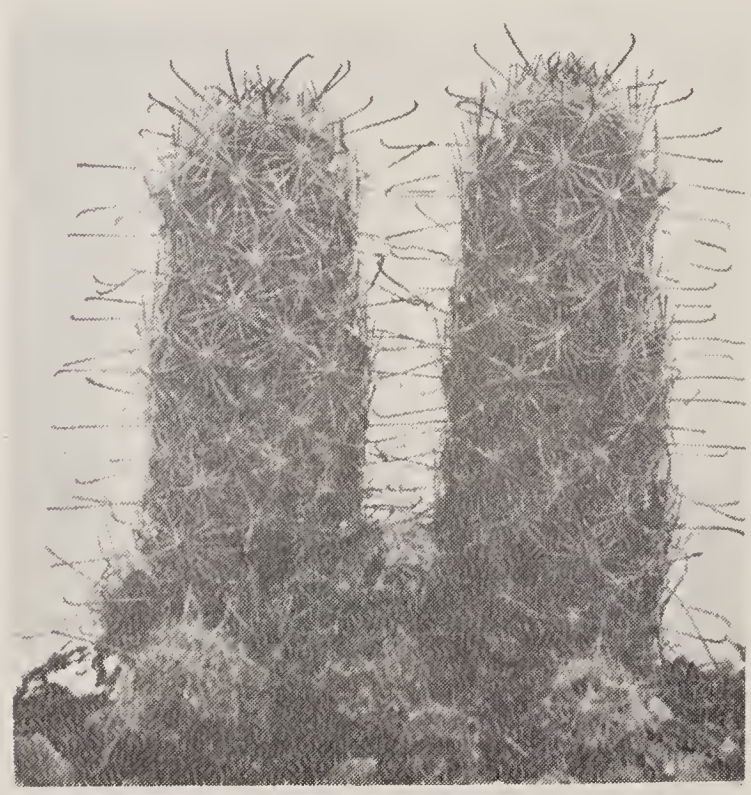
CLUSTERED PINCUSHION
Mammillaria fasciculata
(M. thornberi)

Cactaceae

In W. H. Emory's "Notes of a Military Reconnoisance from Fort Leavenworth, in Missouri, to San Diego, in California," 1848, is his letter reading in part: "Mamillaria. Oct. 26, 1846. Rare; on the Gila, 3,000 or 4,000 feet above the sea. Apparently a **Mamillaria**, though the habit of the plant is more that of an Echinocereus; but all **Echinocerei** have the bunches of spines disposed in vertical ridges, which is not the case in the figure in question. Stems irregularly cylindrical, with divers contractions and swellings, about 4-6 inches high and 1¼-1¾ inches in diameter, many . . . from one base."

"The name of **M. fasciculata** would indicate the peculiarity of this species." (i.e., the stems are arranged in a tight bundle. — Ed.)

Engelmann in 1848 published these notes and agreed with the name suggested by Emory.



In 1891 Kuntz named it **Cactus fasciculatus** in Rev. Gen. Pl.

Later, in 1902, Orcutt called it **Mammillaria thornberi** in West Amer. Sci., since he and Professor Thornber rediscovered the plant near Tucson in that year. He subsequently felt that his "new" Mammillaria was identical with **M. fasciculata**, and was not a **Mammillaria** but an **Echinocereus**. It seems strange that there was this confusion of thought, as the plant is not as large as an **Echinocereus**, has hooked spines that Echinocereus lacks, and bears small Mammillaria-like flowers.

For years this **Mammillaria** has been collected from an area southwest of Phoenix, east through the Papago Indian Reservation, and south to Tucson and southward to Mexico, but it had never been collected at its type locality on the Gila River in eastern Arizona. This was a peculiar circumstance, yet for the last 130 years botanists and writers have reported and illustrated it from Engelmann's works without question.

Dr. Lyman Benson, professor of botany at Pomona College, California, author of many botanical works, was not satisfied with **M. fasciculata's** complex history, so he made a survey of Emory's October 1846 route and campsites, and at the mouth of Bonanza Creek, entering the Gila River, which was the type locality of **M. fasciculata**, he found only **Echinocereus**. No **Mammillarias** or **Coryphanthas** found in the area could be the basis of the illustration in Emory's report, and there is no evidence of any change in vegetation in the area.

What, then, was the cactus Emory found? Apparently it was the **Echinocereus** that Dr. Benson found in the same spot where Emory collected, and

since **fasciculatus** is an older specific name than the one this **Echinocereus** previously carried, Benson now, in his 1969 edition of "Cacti of Arizona", gives Emory's plant the name **Echinocereus fasciculatus**. And that's that.

And the Mammillaria? By default, it now gets **thornberi** for its specific name. There is also the matter of misnumbered drawings in Engelmann's printing of Emory's report, which adds to the confusion that was only removed after 130 years by Dr. Benson.

We certainly have to thank Dr. Benson for his sleuthing and the unravelling of this complex nomenclature, and we are looking forward to the publication of his "Cacti of North America". (His "Cacti of Arizona", "Cacti of California", and "Cacti of Texas" are all in print and available at bookstores.)

Type locality: West of Silver Bell Mtns.

Distribution: Tucson west to Laveen and south to Mexico.

References:

Benson, Cacti of Arizona, editions I, II, and III
Britton & Rose, Cactaceae
Engelmann, Botanical Works

—WHE

Mexican Cactus

MOUND BARREL
Ferocactus robustus

Cactaceae

Most people think of a barrel cactus as being a single "barrel" plant, or a smallish cluster, but here is a barrel cactus with six-inch to eight-inch single heads that in time form a mound up to four feet tall and fifteen feet in diameter.

Mounds of **Ferocactus robustus** are an outstanding feature of the landscape around the city of Tehuacan in the state of Puebla, Mexico, either in the open fields or under trees.

The flowers are light yellow, few to a mound, and thus there are only a few of the scaly fruits, which contain black seeds. However, rodents will carry fruits of other cacti up onto this mounded barrel and then, from a safe vantage point, leisurely eat the "imported" fruits. Many of the seeds of these fruits are dropped into the mound, and this is why so many other small cacti can be seen growing out of the **Ferocactus** mound.

Coyotes, foxes and rodents will burrow into the base of the mound and "den up" or nest within it.

The plant is of no practical use to the Indians of the area. To some extent it is a soil binder and prevents erosion, but it is not considered a useful plant.

It was described by Link and Otto in 1833 as **Echinocactus robustus** in the German publication Allg. Gartenz. Lawrence described it as **Echinofossulocactus robustus** in Loudon, Gard. Mag. 1841. Britton & Rose, in Cactaceae, assigned it to **Ferocactus robustus** in 1922, where it now remains.

It is an easy plant to grow, beginning with a single head which multiplies very slowly. For example, a small mound in the Garden, now eleven inches high and twenty-eight inches in diameter, evolved from a single head planted in 1932. So it is apparent that in their natural habitat many of the larger mounds are over two hundred years old.

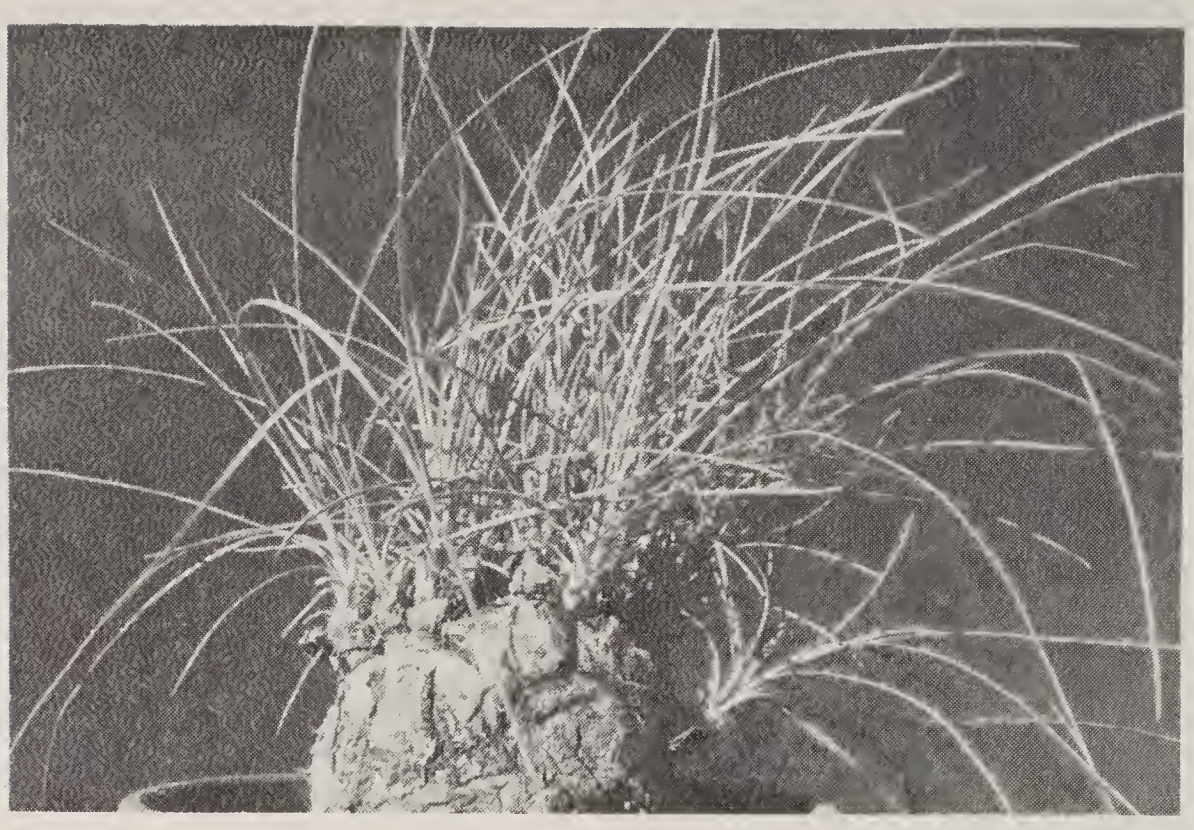
Type locality: Mexico
Distribution: Adjacent to Tehuacan, Puebla

References:
Bravo, Las Cactaceas de Mexico
Britton & Rose, Cactaceae
Standley, Trees and Shrubs of Mexico
—WHE

Above: Mound Cactus under tree, 26" high and 40" in diameter. Below: Dr. Hans Krainz, of the Zurich Botanic Gardens, beside a plant 30" high by 4½' wide. Both pictures taken near Tehuacan in May, 1966.

CONSTRUCTION GOES ON

Summer and Fall construction at the Garden include the work on three bridges, replacing plank bridges with heavy stonework and drain tiles; commencement on the Hiram Pratt Memorial ramada (left) which will be a welcome sit-and-rest spot for visitors; and (below) completion of a painted brick wall at the Visitors' Building entrance, to make the building more attractive and to protect the porch posts from any brakeless car.



Calibanus hookeri, "Saca micate"

This new acquisition at the Garden was given your director when he spoke to the Imperial Valley Cactus Club on October 15th. It was collected by C. Collings, club president, and G. Kinerson, El Centro nurseryman, last summer at Ixmiquilpan, Hidalgo, Mexico. The plant is closely related to our Dasylirion, and is found growing on dry and precipitous mountain tops.

GARDEN ACTIVITIES

NOVEMBER

Tues.	3rd	CACTOMANIACS meeting	8:00 P.M.
Wed.	4th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs	5th	LECTURE—Arizona Cacti	3:00 P.M.
Sat.	7th	NATURE TRIP—Lake Pleasant (45 miles)	8:30 A.M.
Tues.	10th	BONSAI SOCIETY—Displaying Trees effectively	7:30 P.M.
Wed.	11th	CLASSES—Succulent Plants	3 & 8 P.M.
Thurs.	12th	LECTURE—Arizona Wildflowers	3:00 P.M.
Wed.	18th	CLASSES—Culture of Succulent Plants	3 & 8 P.M.
Thurs.	19th	LECTURE—Arizona Trees	3:00 P.M.
Sat.-Sun. 21-22nd		BONSAI SOCIETY FALL SHOW	9-5 P.M.
Tues.	24th	BONSAI SOCIETY Workshop—Members' Trees	7:30 P.M.
Wed.	25th	CLASSES—Desert Trees & Shrubs	3 & 8 P.M.
Thurs.	26th	LECTURE—Arizona Birds	3:00 P.M.

DECEMBER

Tues.	1st	CACTOMANIACS—Christmas meeting	8:00 P.M.
Wed.	2nd	CLASSES—Cultivation of Trees & Shrubs	3 & 8 P.M.
Thurs.	3rd	LECTURE—Arizona Scenics	3:00 P.M.
Sat.	5th	NATURE TRIP—Mogollon Rim (110 miles)	8:30 A.M.
Tues.	8th	BONSAI SOCIETY—Christmas social	7:30 P.M.
Wed.	9th	CLASS (afternoon) FIELD TRIP—Seven Springs	8:30 A.M.
Thurs.	10th	LECTURE—Collecting in Mexico	3:00 P.M.
Sat.	12th	CLASS (evening) FIELD TRIP—Seven Springs	8:30 A.M.
Thurs.	17th	LECTURE—Arizona Cacti	3:00 P.M.
Thurs.	24th	LECTURE—Arizona Wildflowers	3:00 P.M.
Thurs.	31st	LECTURE—Arizona Trees & Shrubs	3:00 P.M.

GIFTS For CHRISTMAS

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Published 10 times a year for members since March, 1947, is the official Bulletin of the Desert Botanical Garden of Arizona. Back issues 50c each. Annual membership in Garden, plus Bulletin. $5.00

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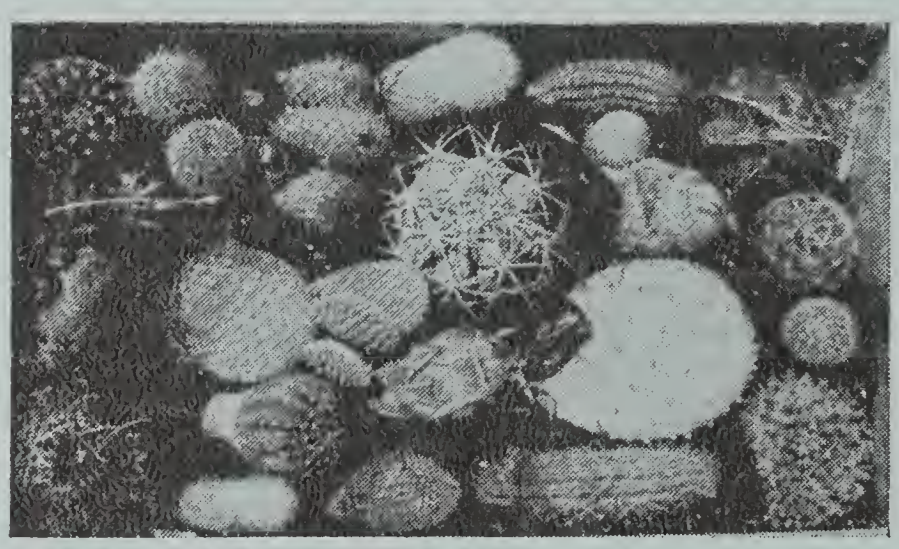

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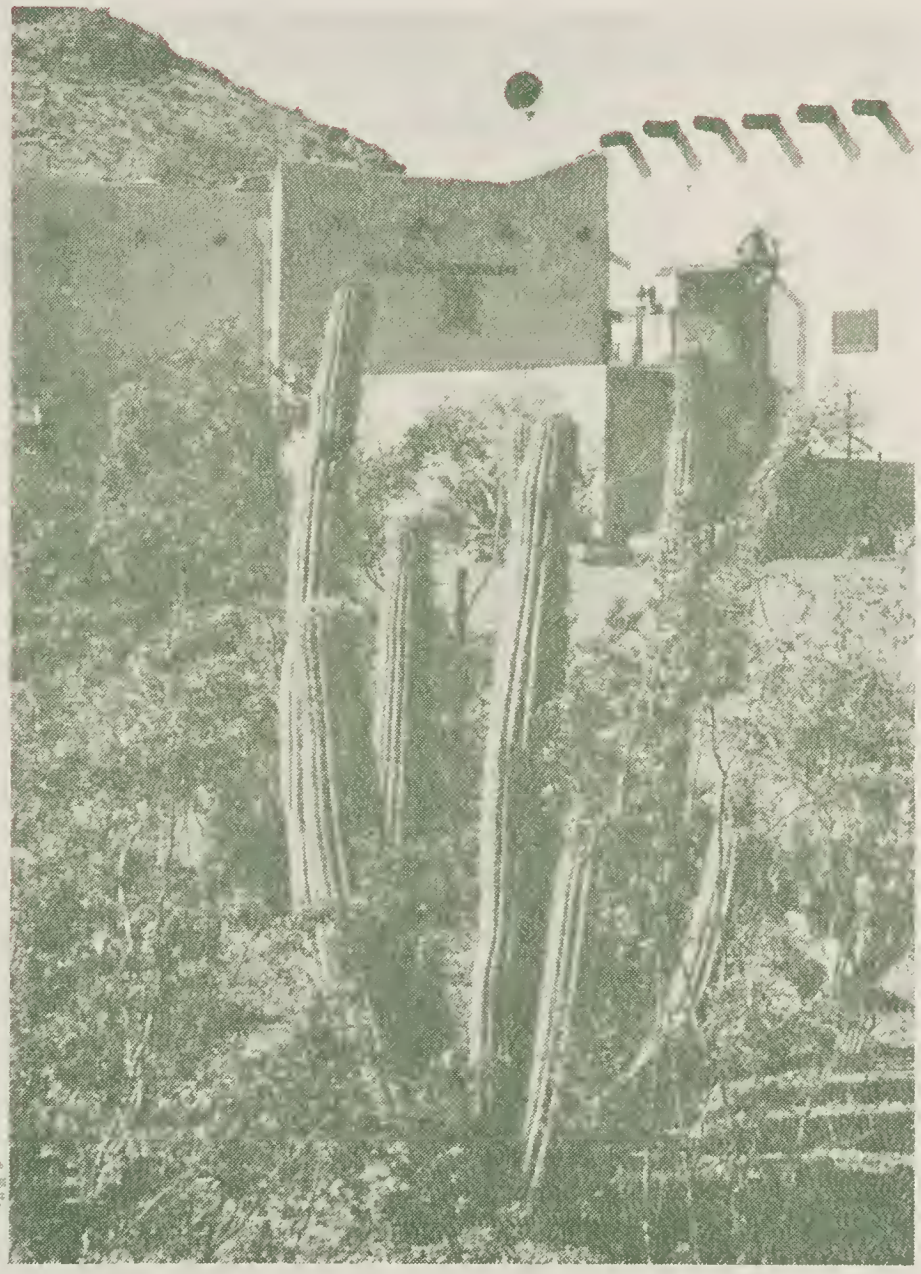
SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXIV December, 1970 No. 10

Season's Greetings



REG MANNING

SAGUAROLAND BULLETIN

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Arizona Cactus and Native Flora Society

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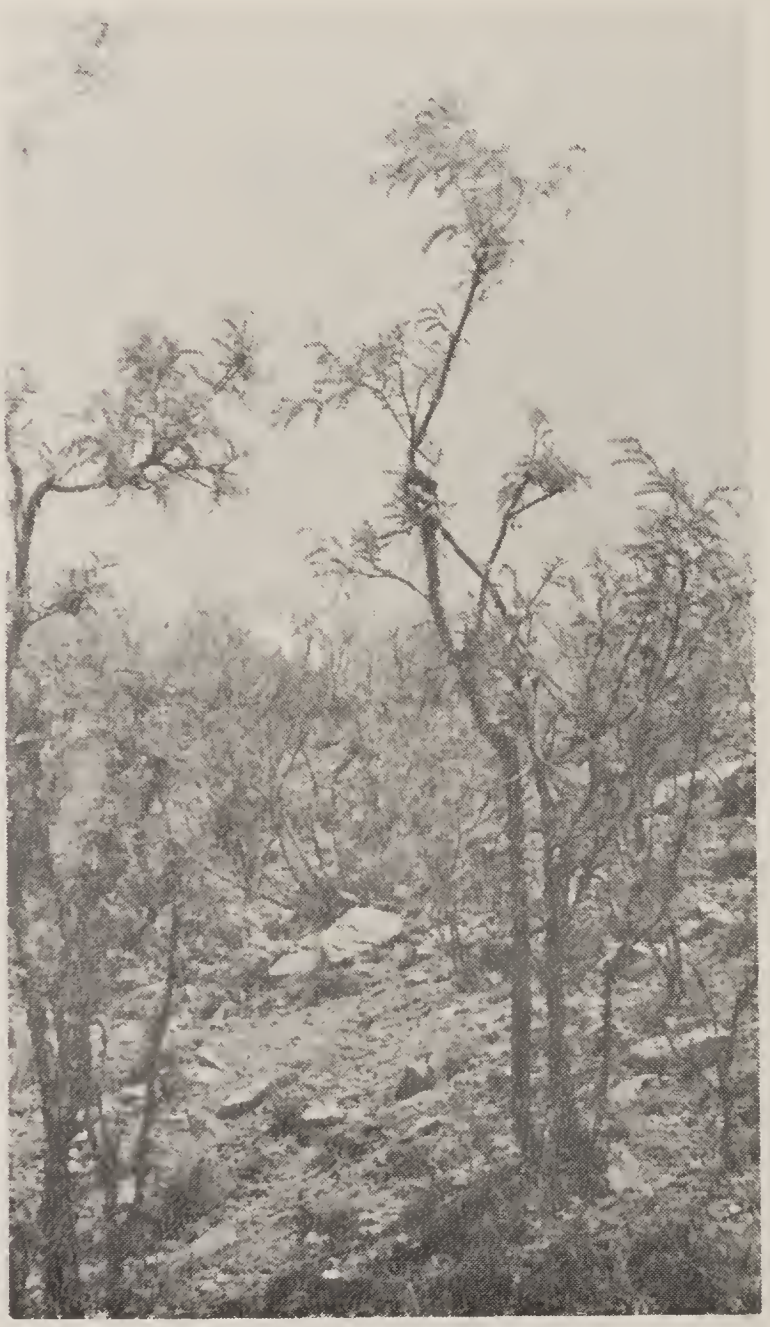
Desert Trees and Shrubs

KIDNEY-WOOD
PALO DULCE
Eysenhardtia polystachya
Ortega Sarg.
Leguminosae
Pea Family

Eysenhardtia polystachya is shrubby or more often arborescent with a short trunk and multiple ascending branches. There are many slender, unarmed stems and twigs which are tan to gray in color. These are glandular and also hairy when young. Height ranges from 2.5 to 6 meters (8.3 to 20 ft.). The hard and heavy heartwood is reddish brown and the sapwood is yellow. Leaves are pinnate and up to 15 cm. in length. There are 10 to 20 paired leaflets and a single terminal leaflet. These are 10 to 20 mm. long and 3 to 6 mm. wide, marrowly oblong in shape, and with a rounded or retuse apex. The thick, pale gray-green leaflet is glandular punctate, having small, sunken, brown glands on the lower surface. These give an unpleasant odor to the plant. Flowering commences in May and continues into August. There are numerous, small, white flowers, that are nearly regular and arranged in terminal, spike-like racemes 12 cm. in length. Petals are up to 7mm. in length and the calyx is near equal in length to the petals. Stamens number ten, one shorter and distinct from the others. Fruit consists of numerous, indehiscent, single seeded, thin walled pods. These are flat, narrowly oblong with upcurved tips, and measure 10 to 18 mm. in length and 2 to 5 mm. in width. The pods are light green turning tan and, like the leaflets and inflorescence, are also glandualr punctate. Seed is small (to 5 mm.), flat, light brown, and somewhat kidney shaped.

Palo dulce has an elevational distribution of from 1067 to 1524 meters (3,500 to 5,000 ft.) extending from the upper part of the lower sonoran zone through the upper sonoran zone. Within the upper margin of the desert grassland and in the lower oak woodland, it is found on arid rocky ridges and slopes and along canyons and watercourses. This species occupies a range from southwestern New Mexico west into southeastern Arizona and south into northern and central Mexico. In Arizona it is most common in Santa Cruz county, but is also found in Cochise, Pima, and Pinal counties.



Pale gray-green leaves and light tan-to-gray twigs identify Palo Dulce.

Flower of Palo Dulce, enlarged to twice normal size.

Eysenhardtia polystachya often produces seed sparingly and the germination percentage is usually low. Fruit can be collected from August into November. No pretreatment of the seed is necessary, however soaking in hot water for 24 hours will facilitate emergence. This species has been successfully grown at the Desert Botanical Garden at an elevation much lower than it normally occupies and in a more xeric situation. It does require a well-drained soil and full sun exposure, but benefits from supplemental water in dry seasons.

Palo dulce is a good browse and honey plant, but perhaps its greatest value is in its medicinal properties (see Saguaroland Bulletin, Vol. XXIII, No. 7, p. 80).

Under cultivation it will grow into an attractive multi-stemmed tree and could well be used in a desert garden in spite of its strong-scented herbage.

REFERENCES:

Benson & Darrow, The Trees and Shrubs of the Southwestern Deserts.
Kearney & Peebles, Arizona Flora.
Little, Elbert L., Southwestern Trees.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.
Standley, Paul C., Trees and Shrubs of Mexico.

——JHW

Branch of Palo Dulce, showing the flower racemes which are approximately five inches long. Photo taken in early June.

COUNTER-CLOCKWISE PINCUSHION

Mammillaria mainae

Cactaceae

Plant lovers who collect plants with unusual spines, or spines of various colors, have a "natural" in this small, solitary (only occasionally clustered) pincushion that has spines of different colors and hooked central spines that grow with a counter - clockwise twist. This "left-hand hook" of the central spines makes M. mainae easily identifiable.

The spines are usually a bone yellow, but there are clusters of this plant along a stream east of Imuris, Sonora, Mexico, that bear jet-black central spines which give the plant an overall dark appearance.

Mammillaria mainae was described by K. Brandegee in Zoe 5:31, 1900 from plants collected by Mrs. F. M. Main near Nogales, Sonora, Mexico. Rose, Stanley and Russell saw the plants in two localities near Hermosillo, Sonora. In 1922 C. R. Orcutt collected the plant again in Sonora.

This plant, with its one, hooked, central spine, has ten to fifteen bristle - like radial spines that spread widely from each areole and slightly obscure the pale green tubercles. Many beautiful flowers, three - quarters of an inch to an inch in diameter, rise from the old axils in late spring, with petals red to pink at the center and white on the margins. Fruit is red, fleshy, and edible, about one-half inch long and nearly one - quarter inch in diameter, filled with dull black seeds.

This pincushion lends itself to culture, and will grow under adverse conditions. It does quite well in the shade of a bush. Grown in greenhouses, it gets quite plump, and is a very attractive plant.

It is found most frequently in Sonora, Mexico, but had been collected west of Nogales, Arizona, and south of Sells, Arizona on the Papago Indian Reservation.

M. mainae *is the cactus with the "left hook". That, plus its colorful spines, makes it a "knockout" in any collection.*

Type Locality: Near Nogales, Sonora, Mexico.

Distribution: Sonora to Sinaloa

References:

Benson, The Cacti of Arizona

Britton & Rose, Cactaceae

Earle, Cacti of the Southwest

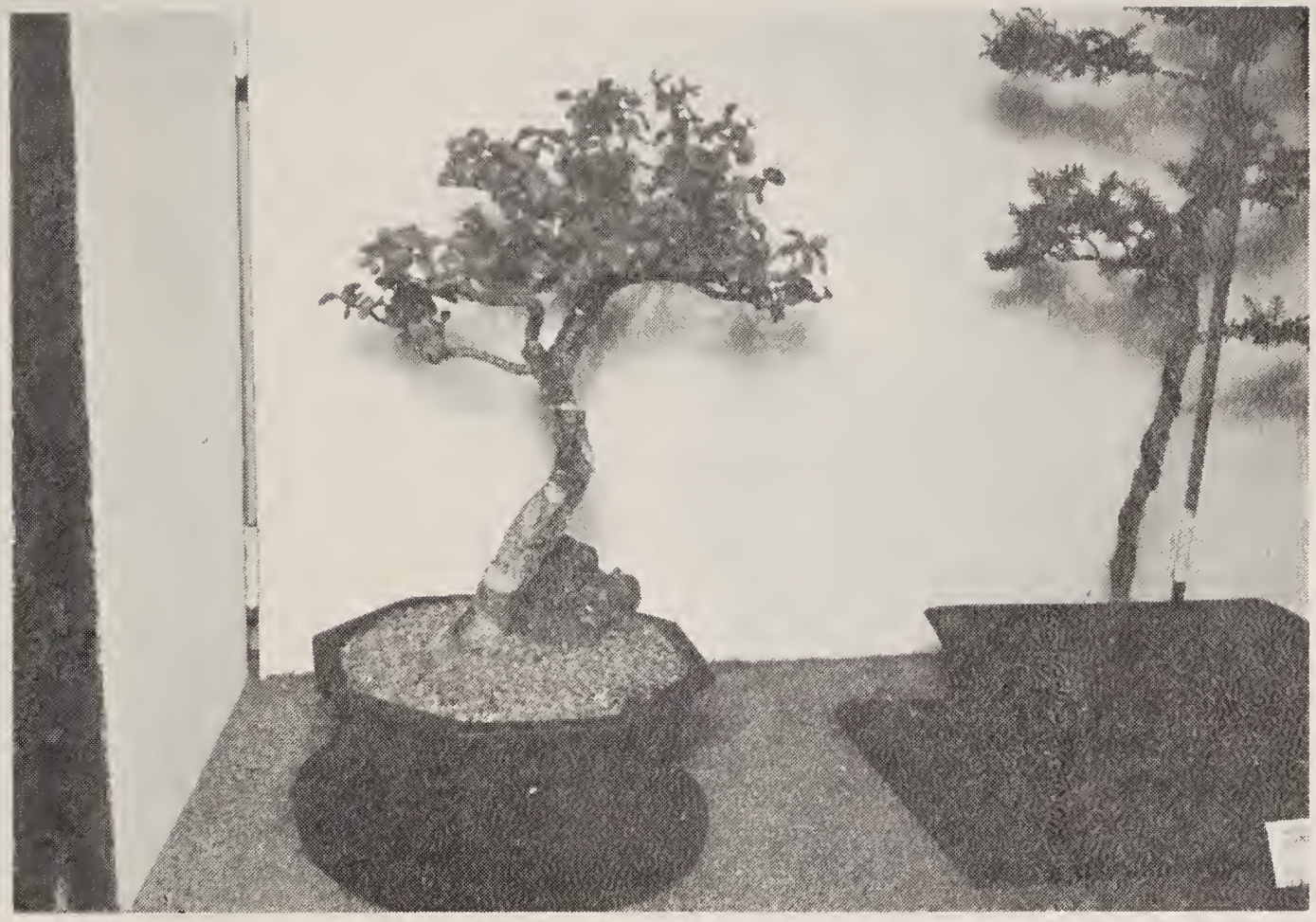
—WHE

ASPECTS OF THE DESERT

There is sometimes snow along the Joshua Forest Parkway, in the high desert northwest of Wickenburg, Arizona. It doesn't fall often, nor does it last long, but it gives these giant yuccas, the Joshua Trees, a new and strange beauty, and turns them into the most bizarre of "Christmas trees".

DESERT BONSAI

The Phoenix Bonsai Society, which has been meeting at the Garden this year, held a well-attended Fall Show in our Webster Auditorium on November 21st and 22nd. Of particular interest to Garden members are the four plants shown here. Some five years ago the Garden recommended a group of about twenty-five desert plants to the American Bonsai Society, plants whose forms suggested bonsai possibilities. How well the possibilities have been realized can be seen in these four exhibits from the recent show.



Top left: Jatropha spathulata, or Leatherplant, a shrub from the mesquite-grasslands of northern Mexico. Lower left: Mexican Ebony (Pithecolobium flexicaule) which can grow to more than forty feet in height and thrives in the Garden. Top right: Elephant Bush (Portulacaria afra), a succulent from the deserts of Africa. Lower right: Atriplex canescens, our familiar four-wing saltbush, most often seen as a huge, sprawling bush. Exhibitors: Roy Erfert, Roy Erfert, Leroy Fuji, Louis Knaak.

Arizona Wildflower

SPREADING FLEABANE
Erigeron divergens

Sunflower Family
Compositae

This common and pretty daisy has a very wide range in Arizona and is about the easiest to identify of all the composites, with its bright yellow center and its very many narrow rays that are white toward the center and bluish-purple at the tips.

Armstrong describes its appearance perfectly, " . . . quite charming, the tufts of foliage dotted with pretty, delicate little flowers, not touching each other, but sprinkled over a large space, recalling the little flowers in early Italian pictures."

Erigeron divergens is found through the state at elevations of 1000 to 9000 feet. It grows on dry rocky slopes, on mesas, and in open pine woods, and is very common in all the Southwest except, oddly, in the deserts of southern California. The northern boundary of its range runs from South Dakota to British Columbia, and it is more or less common in the western part of the continent south to Texas, New Mexico, Arizona, California and northern Mexico.

This is an annual or biennial plant, with several slender hairy branches rising from the tap root. The height is variable, being usually six to fifteen inches, but ranging on occasion from a low four inches to a tall twenty-eight. The stems are freely branched, and spreading, and the plant is often wider than it is high.

Leaves are gray-green, soft and hairy, the upper ones being small and narrow, and the basal ones much larger and oblanceolate in shape. There are one to several flower heads on a branch, each head bearing as many as 150 very narrow rays. In the springtime the flower head may be an inch in diameter, but later flowers are smaller in size. Spreading Fleabane blossoms from February to October.

REFERENCES

Armstrong, Field Book of Western Wild Flowers
Kearney & Peebles, Arizona Flora
McDougall, Grand Canyon Wild Flowers

——LD

For more than half the year Spreading Fleabane can be found in flower. Photographed near Sunflower, Arizona in late April.

Mexican Cactus

Lemaireocereus beneckei

Cactaceae

This is an odd member of the usually columnar Lemaireocereus genus, because it has thin clambering stems that may rise sixteen feet, using the surrounding shrubbery for support. Its blossoms and fruit identify it as a member of the genus which includes large organpipe-like plants up to sixty feet tall and one hundred feet across.

The plant was first found in red lava beds of central Mexico, but we have collected it in forests and along precipitous canyon walls between Taxco and Acapulco.

The stems are a dark green, but all the newly grown tips have a gray-to-white "bloom" that really makes it easy to identify the plant. The long, narrow tubercles are separated by narrow intervals or spaced far apart. Flowers are white, opening at night, only about an inch and a half long, and are followed by rounded fruit with appressed tubercles, each tubercle bearing long brown to black spines.

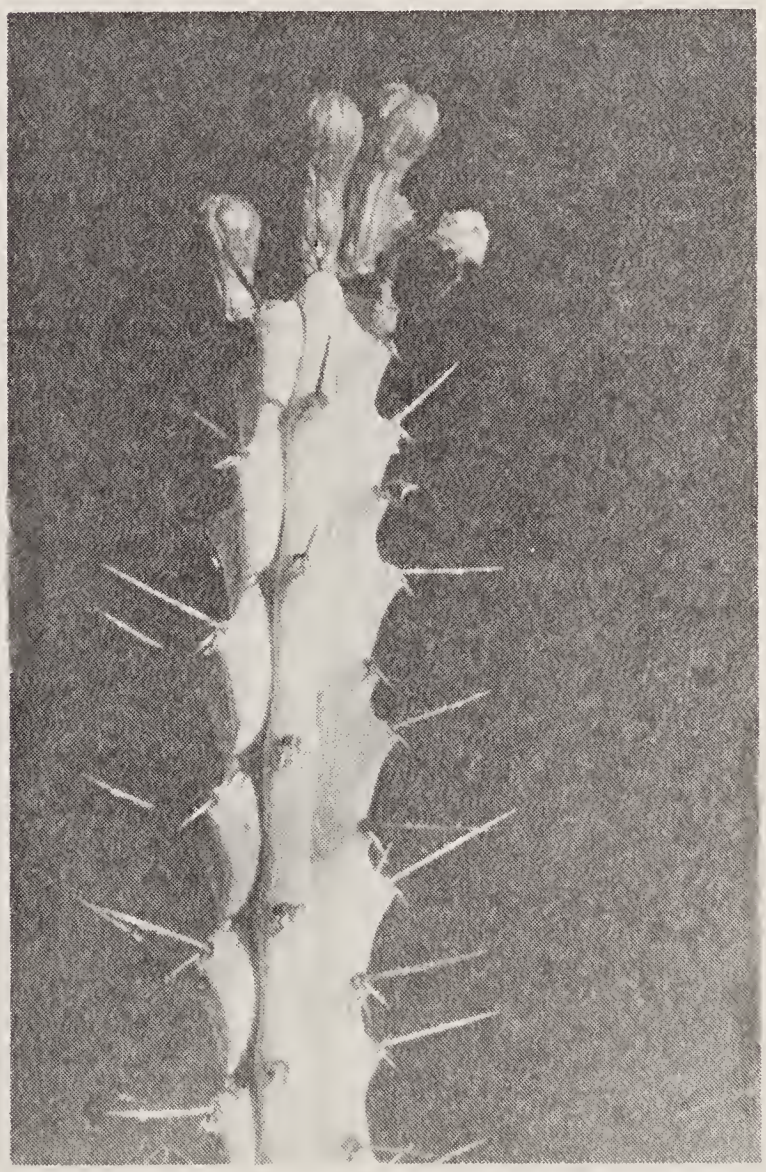
Stems of this plant, 2½ to 3 inches in diameter, seem to root readily, but the plant does not grow fast — which is a boon to many greenhouse owners — and retains the gorgeous "bloom", or white powdery coating, at the tip.

The plant was first described by Ehrenberg (Bot. Zeit. 2:835, 1844) as **Cereus beneckei.** Britton & Rose in Cactaceae, Vol. II, described it as a Cereus, but in 1921 Prof. K. Reiche sent them some living material which had flowers and fruit. This enabled them to classify it accurately as a Lemaireocerous, which they then redescribed in Cactaceae, Vol. IV, 1923.

This plant has somewhat the same physical appearance as **Rathbunia sonorensis,** the Octopus Cactus, but the latter has a red daytime flower and spherical red fruit.

Type locality: Mexico
Distribution: Central Mexico
References:
Bravo, Las Cactaceas de Mexico
Britton & Rose, Cactaceae

—WHE



Both the long, narrow tubercles of L. Beneckei *and the ready-to-open buds are visible in this picture.*

L. beneckei *photographed forty-four miles south of Taxco, Mexico, during our collecting trip in May, 1966.*

GARDEN ACTIVITIES

DECEMBER

Tues.	1st	CACTOMANIACS—Christmas meeting	8:00 P.M.
Wed.	2nd	CLASSES—Cultivation of Trees & Shrubs	3 & 8 P.M.
Thurs.	3rd	LECTURE—Arizona Scenics	3:00 P.M.
Sat.	5th	NATURE TRIP—Mogollon Rim (110 miles)	8:30 A.M.
Tues.	8th	BONSAI SOCIETY—Christmas social	7:30 P.M.
Wed.	9th	CLASS (afternoon) FIELD TRIP—Seven Springs	8:30 A.M.
Thurs.	10th	LECTURE—Collecting in Mexico	3:00 P.M.
Sat.	12th	CLASS (evening) FIELD TRIP—Seven Springs	8:30 A.M.
Thurs.	17th	LECTURE—Arizona Cacti	3:00 P.M.
Thurs.	24th	LECTURE—Arizona Wildflowers	3:00 P.M.
Thurs.	31st	LECTURE—Arizona Trees & Shrubs	3:00 P.M.

JANUARY

Tues.	5th	CACTOMANIACS—"Desert Safari", A. W. Mollison	8:00 P.M.
Wed.	6th	CLASSES—Deserts and their Plants	3 & 8 P.M.
Thurs.	7th	LECTURE—Arizona Birds	3:00 P.M.
Sat.	9th	NATURE TRIP—Canyon Lake (60 miles)	8:30 A.M.
Tues.	12th	BONSAI SOCIETY—Anatomy of a Tree	7:30 P.M.
Wed.	13th	CLASSES—Succulent Plants	3 & 8 P.M.
Thurs.	14th	LECTURE—Arizona Scenics	3:00 P.M.
Wed.	20th	CLASSES—Culture of Succulent Plants	3 & 8 P.M.
Thurs.	21st	LECTURE—Collecting in Mexico	3:00 P.M.
Tues.	26th	BONSAI SOCIETY Workshop—Needle Tree Demonstration	7:30 P.M.
Wed.	27th	CLASSES—Desert Trees & Shrubs	3 & 8 P.M.
Thurs.	28th	LECTURE—Arizona Cacti	3:00 P.M.